

THE ILLUSTRATED LONDON NEWS

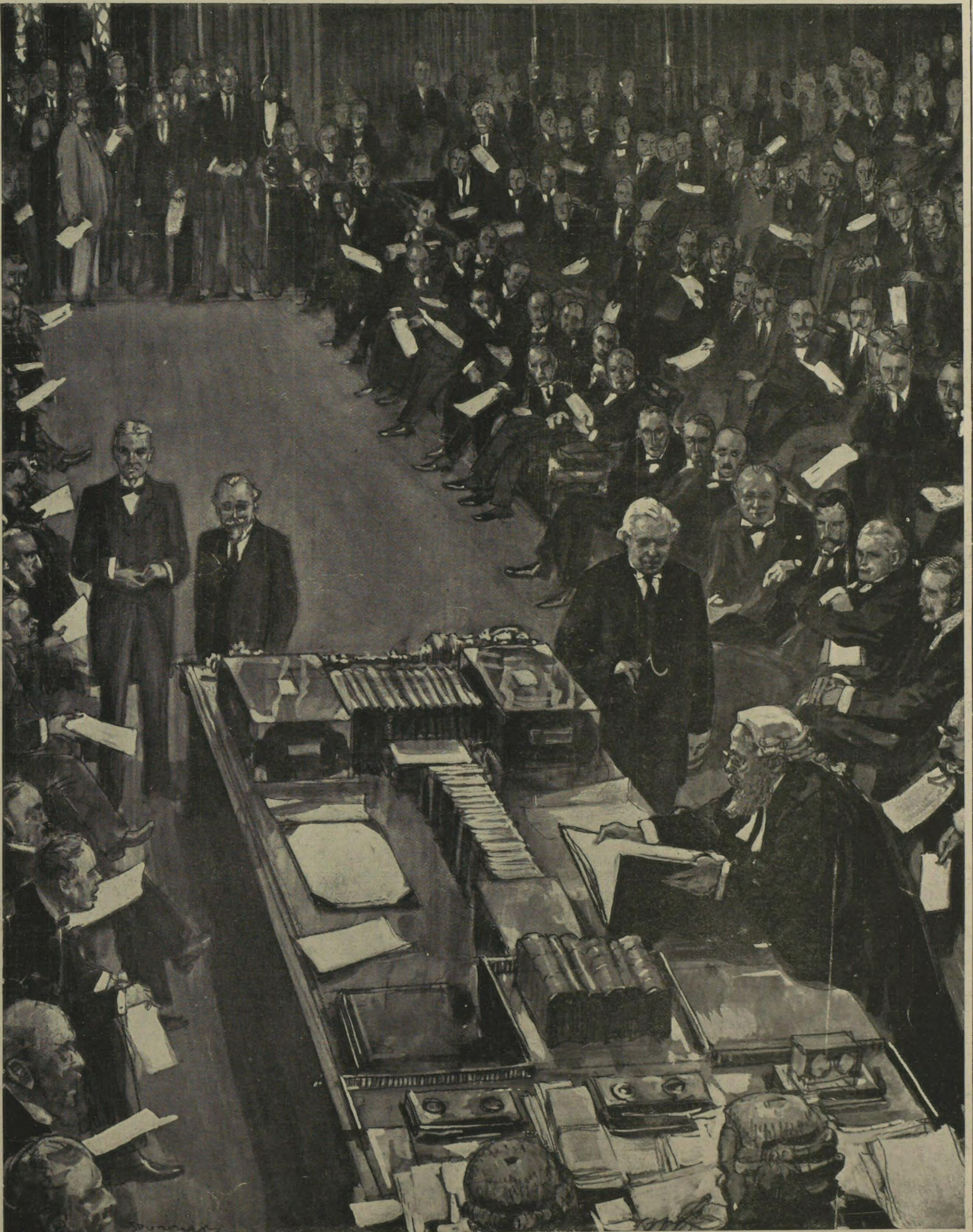
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SATURDAY, MARCH 6, 1920.

ONE SHILLING.

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MR. ASQUITH'S RETURN TO PARLIAMENT: THE SCENE IN THE HOUSE AS THE NEW MEMBER FOR PAISLEY ARRIVED TO TAKE THE OATH AND SIGN THE ROLL.

Mr. Asquith re-entered the House of Commons, as M.P. for Paisley, on March 1. He arrived shortly before four o'clock, and stood at the Bar of the House with his sponsors, Sir Donald Maclean and Mr. George Thorne. Having advanced up the floor to the Table, amid Liberal and Labour cheers, he took the oath and signed the roll, and then shook hands with the Speaker and passed behind the Chair. Mr. Lloyd

George thereupon went behind the Speaker's Chair and shook hands with Mr. Asquith, who presently reappeared and took his seat on the Front Opposition Bench. Our illustration shows the scene as he arrived at the Table. Among the figures on the Front Government Bench to the right will be recognised Mr. Lloyd George and Mr. Winston Churchill.—[Drawing Copyrighted in the United States and Canada.]

DRAWN BY OUR SPECIAL ARTIST, STEVEN STURRIER, R.O.I.



By HILAIRE BELLOC.

THIS poor old modern world, which people (like the writer) are always slanging, and which cannot hit back, is every now and then put into an embarrassment of choice which is really to be pitied. I am afraid I shall not live to see the settlement of these various choices; but it would be a most delightfully interesting experience if only it could be granted to one.

For instance, we have, through the rapidity and vastness of physical discovery, the power to build upon a scale which, so far as our records go, Man never dreamt of before. We can span a space which the methods of beam and arch could not span until to-day. We can get height almost without limit. We can make an equilibrium with shapes that were till yesterday unstable. We possess materials which will support fantastic weights with a seeming inadequacy of bulk. But our traditions, and perhaps some inheritance in our blood, bind us to conceptions belonging to other material and to lesser powers.

Now, shall we continue that tradition, deliberately throwing away our opportunities of the colossal, or shall we suddenly produce the colossal? I mean, shall we *impress architecture* with the effect of the colossal? For, of course, there is a way of making merely big things which wastes their gigantic scale altogether, and either leaves them looking small or disunited.

If such a thing is to come at last, if we are to have a titanic architecture, I should dearly love to see it; but I am afraid it will come after my time, if it comes at all.

Every now and then you see hints at it. There is a hint at it in the hugeness of the unfinished cathedral at Liverpool; and there are certain lights in which the Forth Bridge, which was never designed for effect, startles one. But the modern world as a whole, though it has the material and power to execute, has not conceived the colossal. The unfortunate Germans, as one might imagine from their simplicity of mind, went for it most whole-heartedly, but Heaven knows they failed! Their idea of the colossal was simply to make something much bigger than another thing without any mystical interweaving of colossal shape and colossal material with crude colossal size. I wonder, for instance, how Beauvais would have struck the mind of whatever worthy German designed the Leipzig Monument? Beauvais looks almost too high for man to have made it. William Morris said of it that one could not imagine how a real building could be so high. Yet it is, if I remember rightly, less than 200 feet high.

There is another choice which the modern world has not yet taken (out of a million choices); it has not yet decided on the reconciliation between domesticity and its sudden new powers. A reconciliation could be made; it is not logically impossible; it is only a question of getting into the right mood. But it has not been made. You have so far two sets of incompatible things not yet either hindering or supporting one another, but each going its way separately though in one society, like the Rhône and the Saône at the point where they meet under Lyons—two streams of different colour, texture, and rapidity running side by side in one bed.

For instance, it is pleasant to be warm indoors when it is cold out of doors. Therefore Man made the Hearth, and a universe of traditions around it. Then—quite lately—Man acquired the power to make warmth uniform, and to make it cheaply, over very large spaces; but the way in which he did it was not a marriage between his necessity for the hearth and his mere desire to feel warm. He suddenly thrust forth apparatus the mere sight of which makes life unhappy and the kind of warmth given by which is the kind of warmth one avoids in a conservatory.

Again, we now have ingenious furniture called "Office Furniture": desks that open and shut conveniently, drawers which are very heavy and yet run in and out lightly, and so on. They are useful and new, and belong to our increased powers. But they are deliberately repulsive, and to live with them is a perpetual (and unnecessary) burden. It is so right through all

they say, "must inevitably" kill local feeling, and if they are decent men they regret it because that would be the murder of an individuality. Transport will not kill locality—either national or sub-national—any more than typewriting will kill verse. The appetite of the human being for a realisation of the soul will master any mechanical thing, for the mechanical instruments of Man are but the creation of his soul, and the servant does not permanently rule the master. But the new transport and the age-long and eternal local feeling stand there unreconciled. What are we going to do about it? Here is transport ruining the individuality of cities, breeding hatred between one nation and another by putting men alien one to another into an unnatural communion with each other; bleeding the countryside and swelling the cancer of the industrial cities. How will it be settled? So far we have not attempted to effect any settling. The Soul of Man will settle it at last; but I fear not in our time.

And here is another unsettled choice, and the largest of all: the choice between certitude and uncertainty. The human mind reposes when it is certain, and the human mind cannot long work sanely save upon a foundation of repose. Discovery, even in the low field of physical science, has disturbed this habit of certitude. It disturbs it more profoundly when, on the parallel of physical curiosity, men begin to explore the sacred recesses of the mind and to compare the fully conscious with the less conscious part of themselves.

What are we going to do about it? On the one hand, we have started a whole machinery of inquiry which has become part of our lives, though it leads us nowhere; on the other hand, the working of that machine has already half-destroyed our happiness and threatens to destroy our very powers of appreciation.

That again will settle itself. Some certitude will certainly return, either in what is false or in what is true. And when I come to think of it, this one of

the many situations awaiting solution will probably be solved before the others. For the need is already imperative; it is urgent. And not only will it be solved because the need for a solution is imperative, but also because the process is, as it were, self-governing. If you push inquiry and its accompanying doubt beyond a certain point, you produce a paralysis of judgment such that the mind will accept pretty well anything it is told. It is a paradox, but it is true; and therefore a continued exaggeration of the doubt accompanying continual inquiry will itself come, though I fear in a rather disturbing fashion. You already see signs of that in the way in which men will affirm or deny quite simple concrete things on which they have no experience whatever, but on which they have been indoctrinated by some newspaper. And will this sort of certitude as it increases make for certitude in true things or no?

I cannot tell. Neither can anybody else. But there is this consolation, that Truth confirms itself. People who believe what is real have the Universe in conspiracy supporting them; people who believe what is false have the Universe in conspiracy against them. So Truth will prevail a bit—but not in our time.



MR. ASQUITH ARRIVES AT THE HOUSE—WITH A POLICEMAN ON THE TOP OF HIS CAR, AND A STRONG GUARD: THE MEMBER FOR PAISLEY GOING TO TAKE HIS SEAT.

The crowd, aided and abetted by students, was distinctly "lively" during Mr. Asquith's drive from his house in Cavendish Square to take his seat in the House of Commons once more, as the new Member for Paisley. Early in the drive, an enthusiastic student mounted to the roof of the ex-Premier's car. He was chased off, and, to save further bother of the kind, a policeman took his place.—[Photograph by L.N.A.]

the domestic arrangements. Man has not produced a settlement consonant to his new powers; he has left them dead and put no soul into them; he has bungled his creation.

Here is a third thing he has not reconciled: transport and locality. Most people by this time feel the stupidity of materialism. This is so true that materialists themselves get angry when you call them materialists—unlike Sam Weller's butcher's boy (or baker's boy, or what not—I am not going to look up the reference), who cheerfully agreed that he was no gentleman. Your materialist, after publishing a book stiff with taken-for-granted materialism, sends it out to be criticised. But when its materialism has been duly pointed out he will write angrily to the papers complaining that he has been called a materialist. After all, materialism is a philosophy, and those who believe in it ought to be proud of their creed.

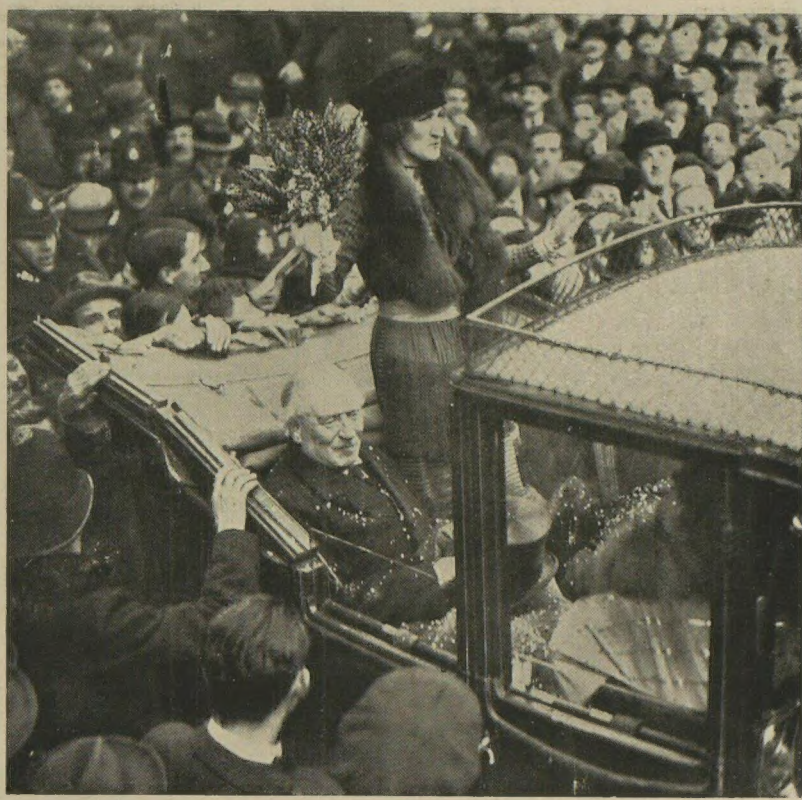
Well, anyhow, most people by this time feel the stupidity of the good old nineteenth-century materialism. Yet when we come to the reconciliation of transport and locality—to the choice between leaving them at the issue and reconciling them—they still take refuge in a desperate materialism. Transport,

MR. ASQUITH "RAGGED": THE EX-PREMIER ON HIS WAY TO THE HOUSE.

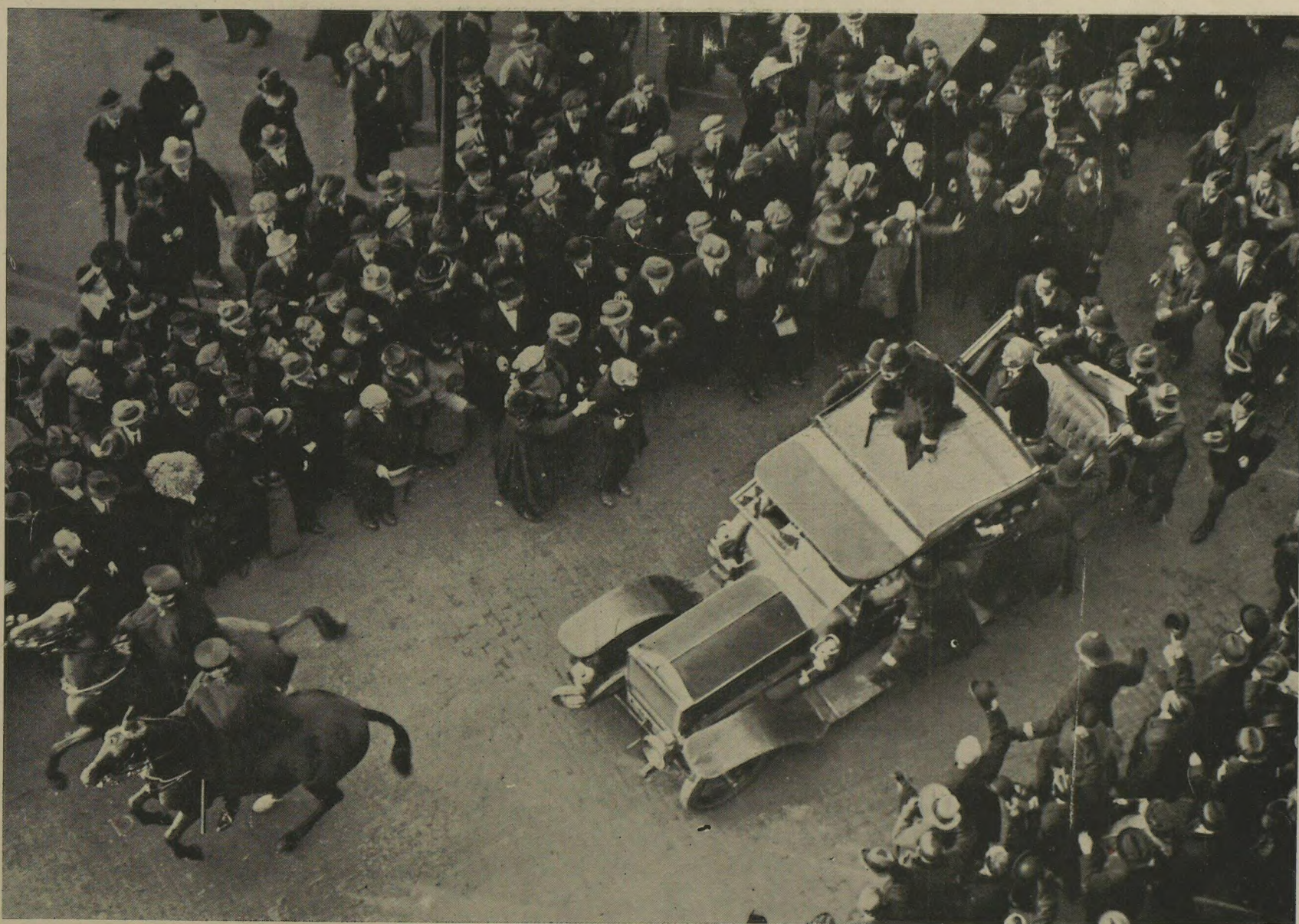
PHOTOGRAPHS BY NEWSPAPER ILLUSTRATIONS AND REGINALD SILK.



WITH A STUDENT ON THE ROOF: THE CAR IN WHICH MR. ASQUITH DROVE TO THE HOUSE SURROUNDED BY A BOISTEROUS CROWD.



MR. ASQUITH SPRINKLED WITH CONFETTI, AND MRS. ASQUITH WAVING A BOUQUET: LEAVING THEIR HOUSE IN CAVENDISH SQUARE.



WITH POLICE (THEIR TRUNCHEONS DRAWN) ON THE ROOF AND STEPS OF HIS CAR, AND THE HOOD BROKEN. MR. ASQUITH DRIVING DOWN PARLIAMENT STREET TO THE HOUSE AMID CHEERING CROWDS, AND A FOLLOWING OF STUDENTS.

Mr. Asquith was the object of somewhat embarrassing and too boisterous enthusiasm when he drove, on March 1, from his home at No. 20, Cavendish Square, to Westminster, to resume his seat in the House of Commons. A crowd of students surrounded the car outside his house, and when the ex-Premier and Mrs. Asquith appeared, pelted them with confetti. The proceedings developed into something like a "rag." A policeman had to eject an intruder from the roof and occupy the position himself, while other policemen mounted guard on the steps, all with drawn truncheons. By the time the car reached

the House, the hood had been broken, the glass wind-screen and side windows smashed, and Mr. Asquith had lost his hat. On the way, the car, in avoiding a group of students, collided with a van. Altogether, the students rather overdid their demonstration, and it was fortunate that no serious accident occurred, as in the "Pussyfoot" rag. They stated then that London ought to know that it is a University town. Perhaps it would be well now in the knowledge were taken as having been acquired. Although such "rags" may be perfectly good-humoured, they are apt to lead to regrettable consequences.

THE RIVIERA SEASON IN FULL SWING: LAWN TENNIS ENTHUSIASTS.

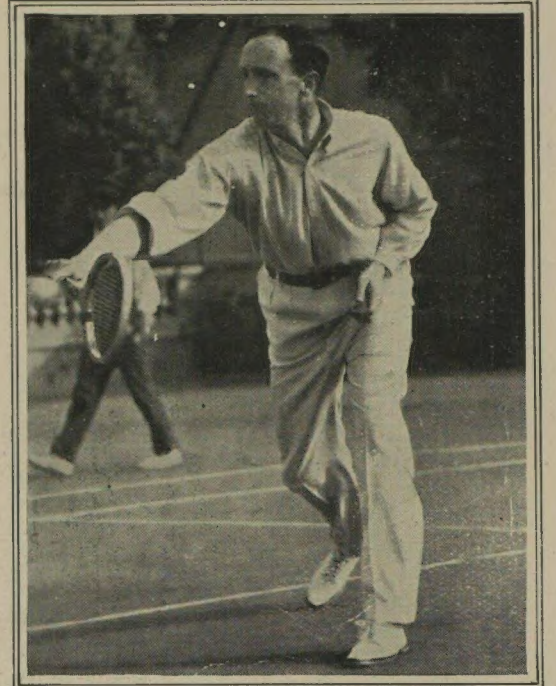
PHOTOGRAPHS BY S. AND G.



IN PLAY: THE COUNTESS OF ROCKSAVAGE.



SERVING: LORD EDWARD GROSVENOR.



IN A TOURNAMENT: LORD CHARLES HOPE.

OUT-DOOR sport draws as many people to the Riviera as the prospect of wearing pretty frocks in the sun, or enjoying a mild gamble." The Earl and Countess of Rocksavage, for instance, are real devotees of open-air exercise. Lord Rocksavage, who is the elder son of the Marquess of Cholmondeley, is not only a good lawn-tennis player, but is one of the rising personalities in the polo world, and has had some polo on the Riviera as well as lawn-tennis. Lady Rocksavage, who is the sister of Sir Philip Sassoon, is a good lawn-tennis player, too; and Lord Edward Grosvenor, uncle of the Duke of Westminster, is another interesting personality who appears on our page, and who plays at the Beaulieu Club.



SOCIETY PLAYING LAWN-TENNIS ON THE RIVIERA: THE BEAULIEU CLUB—A GENERAL VIEW.

LORD CHARLES HOPE, brother of the Marquess of Linlithgow, is a well-known sportsman whose successes in the golf world last year were considerable, as it will be remembered that he won the Active Services Championship at Sandy Lodge and the Medal at St. Andrews. Lord Charles, however, is fond of lawn-tennis as well as golf, and is one of the personalities of the hard courts at Cannes, where he competed in the International Tournament. Mlle. Suzanne Lenglen, the girl champion, has been playing at Nice, where her father is Secretary of the Club: and Lord D'Abernon and Mrs. Beamish are other important figures in the lawn-tennis set in the sunny South, where visitors have been detained recently owing to the railway strike.



AN ENTHUSIAST: THE EARL OF ROCKSAVAGE.



WITH LORD D'ABERNON: MRS. BEAMISH.



THE GIRL CHAMPION AT NICE: Mlle. LENGLEN.

The lawn-tennis clubs are a great centre of social life on the Riviera, and many well-known people took part in the recent International Lawn-Tennis Tournament at Cannes. Our photographs of the Countess of Rocksavage, the Earl of Rocksavage, and Lord

Charles Hope were taken in the Tournament. Lord D'Abernon and Mrs. Beamish were also competitors. Mlle. Lenglen's dazzling play at Wimbledon last summer, when she won the championship from Mrs. Lambert Chambers, will long be remembered.

PERSONALITIES OF THE WEEK: PEOPLE IN THE PUBLIC EYE.

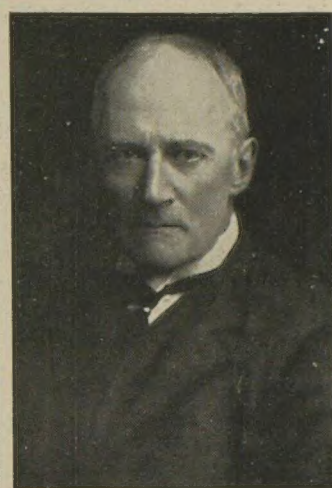
PHOTOGRAPHS BY BASSANO, CHANDLER, ELLIOTT AND FRY, C.N., TOPICAL, RUSSELL, AND LAFAYETTE.



APPOINTED CONSTABLE OF THE TOWER IN SUCCESSION TO THE LATE SIR EVELYN WOOD: FIELD-MARSHAL LORD METHUEN.



APPOINTED LIEUTENANT OF THE TOWER, IN SUCCESSION TO SIR IAN HAMILTON: LIEUT.-GENERAL THE EARL OF CAVAN.



ELECTED TO THE CHAIR OF POETRY AT OXFORD: MR. W. P. KER, PROFESSOR OF ENGLISH LITERATURE AT UNIVERSITY COLLEGE, LONDON.



THE FRENCH MINISTER OF PUBLIC WORKS, WHO DEALT FIRMLY WITH RAILWAY STRIKE DELEGATIONS: M. LE TROCQUER.



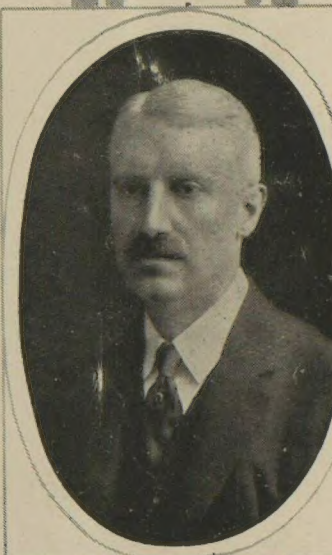
CLOSELY CONCERNED WITH GOVERNMENT MEASURES IN THE FRENCH RAILWAY STRIKE: M. JOURDAIN, MINISTER OF LABOUR.



A U.S. AIRMAN WHO FELL OVER FIVE MILES (AFTER REACHING 36,020 FT.—A RECORD) AND LANDED SAFELY: MAJOR R. W. SCHROEDER.



APPOINTED BRITISH AMBASSADOR EXTRAORDINARY IN WASHINGTON: SIR AUCKLAND GEDDES, M.P.



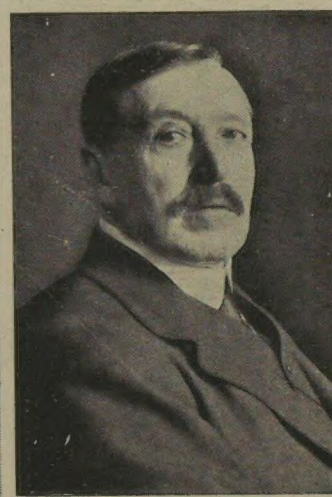
APPOINTED UNITED STATES SECRETARY OF STATE: MR. BAINBRIDGE COLBY, A WELL-KNOWN NEW YORK LAWYER.



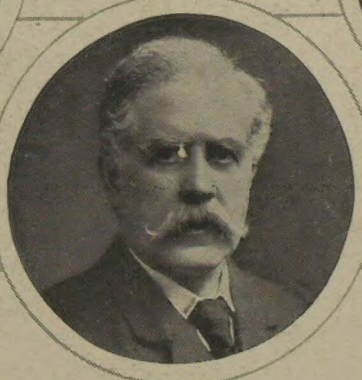
RETIRING: SIR FRANCIS H. DENT, GENERAL MANAGER OF THE SOUTH-EASTERN AND CHATHAM RAILWAYS MANAGING COMMITTEE.



THE DEATH OF A POPULAR M.P.: THE LATE MR. JAMES ROWLANDS, WHO REPRESENTED DARTFORD AS A COALITION LIBERAL.



PROBABLY THE MOST POPULAR NOVELIST: THE LATE MR. CHARLES GARVICE, AUTHOR OF "JUST A GIRL" AND MANY OTHER STORIES.



RECOMMENDED FOR APPOINTMENT AS REGIUS PROFESSOR OF MEDICINE AT OXFORD: SIR A. E. GARROD, OF ST. BARTHOLOMEW'S HOSPITAL.



RESIGNED: LORD STRATHCLYDE, LORD PRESIDENT OF THE COURT OF SESSION AND LORD JUSTICE-GENERAL FOR SCOTLAND.

ABORTIVE THROUGH PUBLIC DISAPPROVAL: THE FRENCH RAILWAY STRIKE—INCIDENTS IN PARIS.

DRAWN BY OUR SPECIAL ARTIST IN PARIS,

BAYAN DE GRINEAU, AND SENT TO LONDON BY AEROPLANE.



1. THE DEVASTATED AREA MOTOR SERVICE ALTERS COURSE: AT THE GARE ST. LAZARE.
2. PUBLIC CONFIDENCE IN AIR SERVICES: A RUSH AT THE AIR-MAIL OFFICE.
3. WAITING FOR THE BUREAUX TO OPEN: PASSENGERS AT THE GARE DE LYON.

The French Railway Strike was settled late on the evening of March 1, when it was announced that the railwaymen's leaders, after negotiating with the Government, had decided to proclaim the strike at an end, and that the National Federation of Railwaymen would order work to be resumed immediately. The strike began on the Paris-Lyon-Mediterranée (P.L.M.) system, the largest in France, on February 25, because a carpenter who had left work without leave had been suspended for two days. Later the movement assumed a more serious character, the

PARIS AT LAST! A TRAIN-DE-LUXE (?) MANAGES TO GET FILLED WITH STARVING PASSENGERS.

THROUGH FROM THE RIVIERA IN THE EARLY MORNING NO PORTERS. NO TAXIS. NO BUFFET!

National Federation declaring a general strike; and the Government called up as reservists 10,000 men on the P.L.M. As in this country, the strike was very unpopular with the public, and this did much to stop it. Volunteers came forward, and once more the value of motor transport in such emergencies was shown. The aerial services were also greatly in demand, and we may note that the original of the above illustration came over from Paris by aeroplanes.—(Drawing Copyrighted in the United States and Canada.)

4. DUMPED ON THE TRACK: PASSENGERS TRAMPING TO THE NEAREST STATION.
5. AT THE PREFECTURE DE POLICE: MOBILISING LORRIES AND ENROLLING VOLUNTEERS.
6. A LAST TRAIN: SUBURBAN PASSENGERS SWARMING OVER ENGINE AND CARRIAGES.

AFRICA AS SEEN FROM AN AEROPLANE: ACROSS THE CENTRAL ZONE.

BY LEO WALMSLEY, M.C., LIEUT., R.A.F.

Author of "Flying and Sport in East Africa," shortly to be published by Messrs. Blackwood.

ALTHOUGH the Cairo-to-Capetown air pioneers may be the first to make a direct journey across Central Africa by aeroplane, several airmen, among whom I am fortunate to be, flew in stages from British East, through German East, to Nyassaland and Portuguese East Africa; and, in view of the fact that our operations were carried on over a period of two years, our experiences should be of some practical value.

The Central zone will always be the most difficult of the route, for, lying entirely in the tropics, it presents many special problems. Practically the whole of it lies several thousand feet above sea-level, and is covered with bush and forest of varying density—rarely so thin, however, as to permit of a successful forced landing.

The problem of aerodromes, perhaps, is the most difficult of all. Even where there are comparatively open spaces, termite heaps are a tremendous nuisance. To clear one away in the first instance may mean the removal of many tons of earth, and, unless they are constantly watched, these pests will in a few days raise a new mound high enough to wreck an aeroplane.

It is impossible, without considerable experience, to spot a termite heap from the air, and it is infinitely more dangerous to crash into one of these when landing in an otherwise open and level space than to crash into the forest, where the branches and foliage act as buffers—to the occupants of the machine at any rate.

Contrary to what one might naturally expect, the atmospheric conditions on the whole are excellent. During the hours of greatest heat—between 10 a.m. and 3 p.m.—the air up to 3000 feet is, of course, very unsteady, for it is practically boiling. The "bumps" and "air pockets" at times are sufficient to wreck certain types of aircraft, and to render the larger kinds like the Handley-Page and Goliath uncontrollable. But in the early morning, late afternoon, and night the air is, if anything, more steady than that of temperate climes, and flying is indeed a pleasure.

In the rainy season, which lasts roughly from February to the end of April, the atmospheric conditions are not so favourable, for fierce thunderstorms

may be expected every day. With an aeroplane carrying a sufficient margin of petrol these storms can usually be dodged; but they may easily take a machine so far out of its course as to cause a forced landing from petrol shortage, and the occupants may have to spend several days and nights in savage country, infested with dangerous animals.

No country in the world could possibly be more interesting than Africa as seen from the air. The more open regions of the veldt swarm with game, and herds of antelopes, zebras, giraffes, elephants are easily seen. As a rule, they do not seem in any way perturbed by

250 miles distant, and the normal circle of visibility has a diameter of 300 miles. The immense area that an airman sees on an ordinary voyage may be imagined, and it is a favourite boast of mine that in my two years' flying in East Africa I must have seen more of the country than any living person.

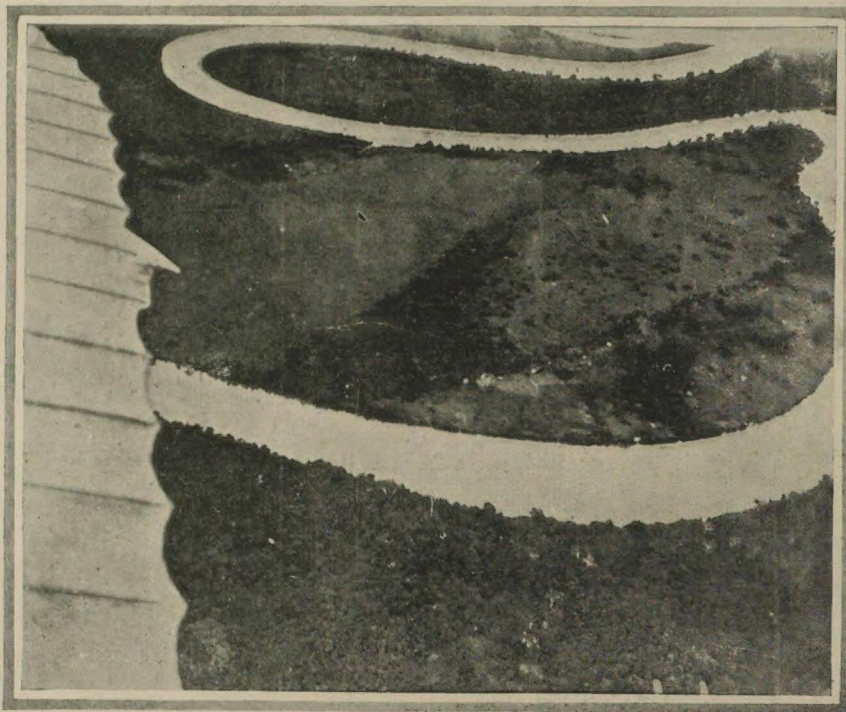
For practical purposes night flying will have many advantages, although this would be of little use to sightseers, who, it may be anticipated, will form the greater proportion of the air passengers. The air scenery of the Dark Continent is magnificent and absolutely unrivalled. There, instead of the conventional geometrically ruled out fields, railways, and cities of civilisation, one has a glorious vista over the wild, rolling, sun-baked veldt, with its great marshy rivers and mysterious lakes, wooded kopjes, and ragged blue mountains.

As most of our flying was done in the early morning and evening, it can be imagined what splendid sunrise and sunset effects we saw, particularly while operating near to Kilimanjaro, the highest mountain in Africa.

In the evening, the sun, sinking behind this mighty volcanic mass, would cast great scintillating bars of light across the giant glaciers and dazzling snowfields, accentuating the deep purple shadows of the lower slopes, and making a wonderful and unforgettable picture.

The coastal airscape has an artistic charm all its own. Only a narrow strip of snow-white sand separates the luxuriant dark green carpet of coconut palms and mango-trees from the foam-specked azure waters of the Indian Ocean, whose sunken coral reefs and mysterious sea gardens are revealed to the airman as through some magic mirror.

The Mountains of the Moon, the great African rivers, the big lakes, as viewed from the air are incomparably lovely; and these places will be popular with the air tourist of the future, who will pay hundreds of pounds to see sights that we airmen saw every day of our lives while hunting the Hun in East Africa.



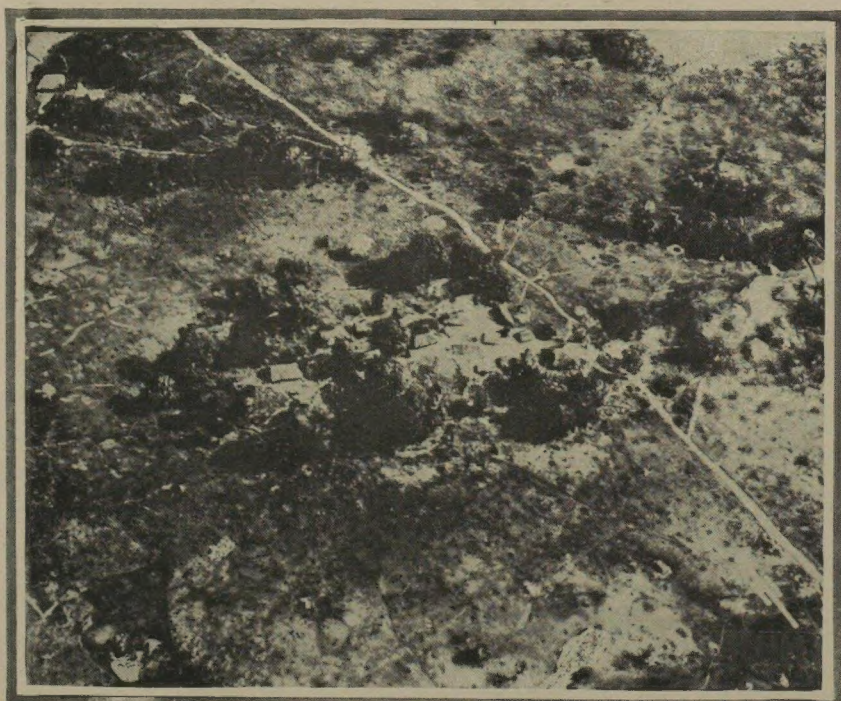
A CURIOUS SNAKE-LIKE EFFECT: A WINDING AFRICAN RIVER SEEN FROM AN AEROPLANE, WHOSE WING APPEARS ON THE LEFT.
Photographs by Lieut. Leo Walmsley, by Courtesy of the Air Ministry.

the sound of the aeroplane, unless one flies very low. To see a herd of elephants stampeding terror-stricken through the forest is a wonderful sight, but one which may be a common experience of the regular pilots and passengers of the London—Cape expresses.

One of the most remarkable phenomena of Central Africa is the clearness of the atmosphere. On a cloudless day it is frequently possible to see mountains



PHOTOGRAPHED BY A BRITISH AIRMAN WHO CLAIMS TO HAVE SEEN MORE OF EAST AFRICA THAN ANY LIVING PERSON: A NATIVE VILLAGE.



"NO COUNTRY IN THE WORLD COULD POSSIBLY BE MORE INTERESTING THAN AFRICA AS SEEN FROM THE AIR": ANOTHER VIEW OF A NATIVE VILLAGE

A LAND WHOSE GRIM GODS GUARD ITS SECRETS: AFRICAN AIRSCAPES.

AIR PHOTOGRAPHS BY LT. LEO WALMSLEY, M.C., R.A.F. (AUTHOR OF "FLYING AND SPORT IN EAST AFRICA"), BY COURTESY OF THE AIR MINISTRY.



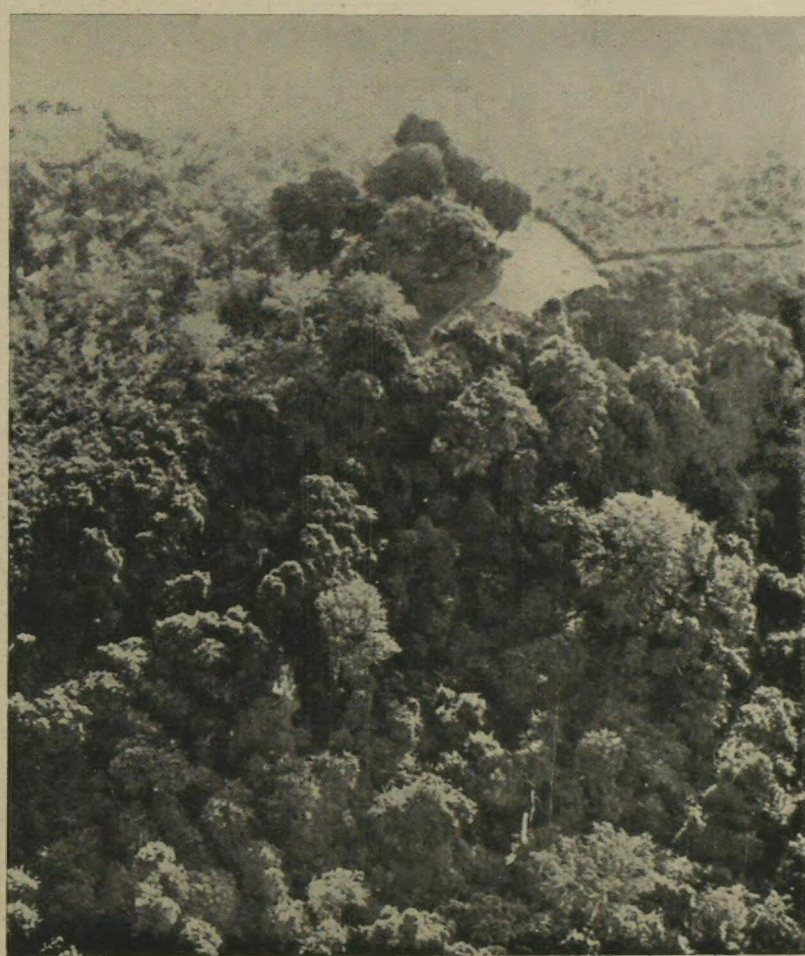
ROLLING ITS "WATERY LABYRINTH": A WINDING AFRICAN RIVER, PHOTOGRAPHED FROM AN AEROPLANE.



"IT CAN BE IMAGINED WHAT SPLENDID SUNRISE AND SUNSET EFFECTS WE SAW": SUNSET OVER LAKE NYASA.



WITH NATIVE CLEARINGS SHOWN AT THE BOTTOM OF THE PICTURE: THICK BUSH AS SEEN FROM THE AIR.



"AFRICA IN HER MATTED HAIR OBSCURE": DENSE FOREST OF THE TROPICAL ZONE—DIFFICULT COUNTRY FOR A FORCED LANDING.

Although these photographs were not taken from any of the machines engaged in the Cairo-to-the-Cape flight, the country they show may be regarded as typical of that which the various aeroplanes have passed over in the central zone. These particular views belong to the time of the war in "German East," and are none the less interesting on that account. They are the work of Lieut. Leo Walmsley, whose article on the opposite page describes his flying experiences in Central Africa. Commenting on the recent accident to the "Times" machine, which fell at Tabora, in the Tanganyika Territory (the

new name for German East Africa), that paper says: "The old saying runs—*Ex Africa semper aliquid novi*. That may be true, but Africa seems to resent the proposed introduction of extraneous novelties. It would seem that the Dark Continent, which has so grimly guarded its secret until our own day, is still unwilling that men should pry more fully from the air at her secluded ways. The jealous gods of Africa have now stricken down no less than four of the aeroplanes which sought to fly from end to end of their domain, and a flight from Cairo to the Cape has become a sporting adventure."

The World of Sound: VI.—“Sound in the War.”

By PROFESSOR W. H. BRAGG, C.B.E., D.Sc., F.R.S.

IN the war sound has played its part on land and at sea, under ground and in the air.

One of the most urgent problems of naval warfare was to discover a reliable and effective method of detecting the presence of a submarine. It might be

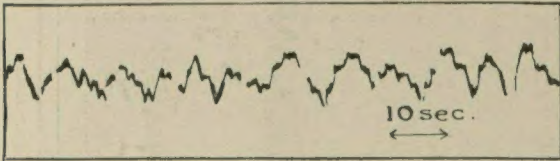


FIG. 4.—WITH THE MICROPHONE MOUNTED ON A NON-RESONANT BLOCK OF RUBBER: A SHIP'S SOUND RECORDED ON A CINEMATOGRAPH FILM.

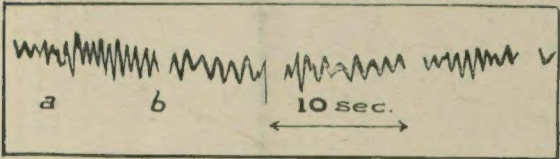


FIG. 5.—WITH THE MICROPHONE MOUNTED ON A RESONANT METAL SHEET: THE SAME SHIP'S SOUND-RECORD DISTURBED BY VIBRATIONS (ESPECIALLY FROM *a* TO *b*) OF THE RECEIVING INSTRUMENT.

thought that the sea under the surface could be lit up by powerful lights which would show up a lurking enemy; but the water is so full of suspended matter that a light does no more than fill the space round

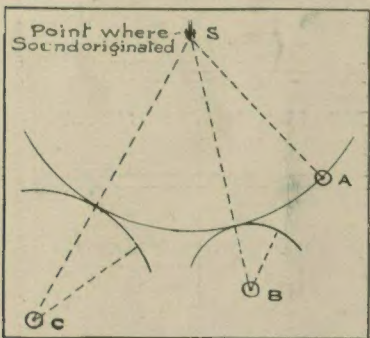


FIG. 14.—CALCULATING DISTANCES BY THE KNOWN VELOCITY OF SOUND TO LOCATE ENEMY GUNS: SOUND-RANGING BY MICROPHONES (*A*, *B*, AND *C*) WHEN A GUN IS FIRED AT THE POINT *S*.

it with a luminous haze. Again, a submarine cannot be discovered by electrical means at more than one or two hundred yards. It is true that instruments can be made to detect a mass of metal by its electric or magnetic qualities at even greater distances; but such instruments could not be used at sea, and, if they could, their indications would be drowned by a medley of similar disturbances present when there is no submarine at all. Sound alone can give indication as much as a mile away, and no less distance can be

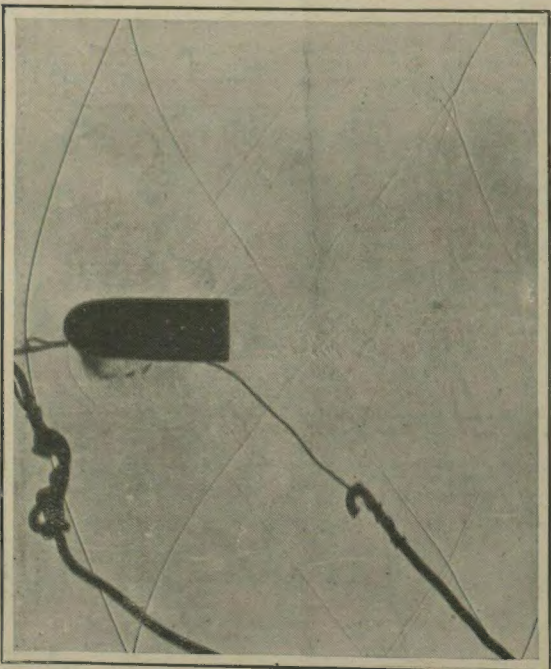


FIG. 17.—SHOWING TWO V-SHAPED AIR-WAVES, CAUSED WHEN A PROJECTILE MOVES FASTER THAN SOUND: A BULLET JUST AFTER LEAVING A RIFLE.

Copyright Photograph by C. V. Boys.

accepted as useful. Ships in motion make a great deal of noise in the sea. Much of it comes from the propeller. The beat of the engine and the whirr of the turbine are also communicated to the water by way of the screw. At the same time the noise made by the ship in which someone is listening for other ships is highly disturbing to the listener. A sound of different character from the background, such as a bell or a signal, can be easily heard, even on a moving ship (Fig. 3); but it is a very different thing to try to hear another vessel that is moving with as little noise as possible.

Our ears are not made to be used under water, so that it is always necessary to find some mechanical means of transferring the sound from the water to the ear. The transfer is not easily accomplished without so much distortion that the ear cannot exercise its fine powers of analysis.

A very simple method of transfer is to lower into the water a hollow vessel connected by a pipe to the ear. The pulses in the water acting through a thin metal sheet forming one side of the vessel cause pulses in the air within, which run up the tube to the ear (Fig. 1). The vessel can be made wholly of rubber, such as a ball or tube, strong enough to stand the water-pressure. The sound in this case is rendered more faithfully, though, perhaps, not so strongly. The can with its metal sheet is noisier, but less distinct. Vibrations of the thin wall add themselves to the true sound. Another method of transferring sound to the ear employs a

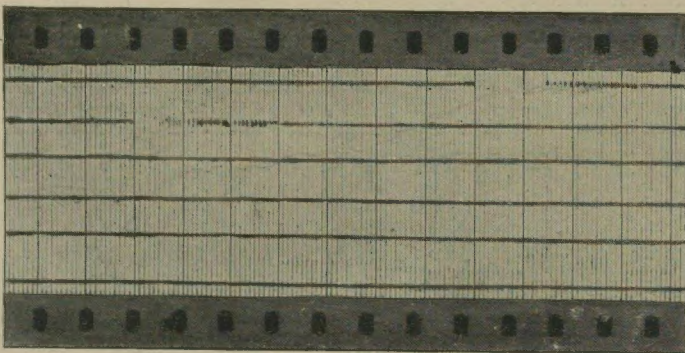


FIG. 19.—NAVAL SOUND-RANGING BY HYDROPHONES: AN ACTUAL RECORD OF AN EXPLOSION AT SEA 70 MILES AWAY

microphone (Fig. 2). This consists of a pinch of carbon grains between two carbon plates; an electric current is driven by a battery across the grains and through a telephone system. When the microphone is shaken the passage of the current is interfered with and a noise is caused in the telephone. In this way a very loud reproduction of a sound in the sea can be conveyed to the ear; but there is more chance of distortion than by the simple tube already described. Distortion may be illustrated in the following way. By a certain device optical records of sound can be obtained. Figs. 4 and 5 show two such records, both relating to the sound made by the same ship. In one case the microphone is mounted on a metal sheet whose vibrations are troubling the record—e.g., from *a* to *b* in Fig. 5. In Fig. 4 a block of rubber has been used instead of the metal plate.

A “hydrophone” containing a microphone was used before the war for listening to the warnings of under-water bells. A modification of it was used during the war by the “drifters” that patrolled the coasts. The drifter set (Fig. 6) does not give the direction from which the sound comes; this very desirable property is attained by another modification. The microphone is placed within a very small metal water-tight box, and the box is mounted at the centre of a circular metal sheet; the latter is mounted on a heavy circular ring. When this instrument (Fig. 7) is held edgewise to the source of sound it does not hear, but it hears in any other position. An experiment will make this clear. In the long tank a pendulum is suspended, having at its lower end a paddle dipping into the water. When the pendulum is set so that the paddle is square to a wave sent along the tank (Fig. 8) it vibrates to the wave; but when the pendulum is turned

so that the paddle is set edgewise (Fig. 9) it does not move when the wave passes it. The principle is further illustrated by the apparatus shown in Fig. 11. When the tuning-fork is held at one side of the mica sheet on which a microphone is mounted, the sound of the fork is heard issuing from the loud-speaking telephone

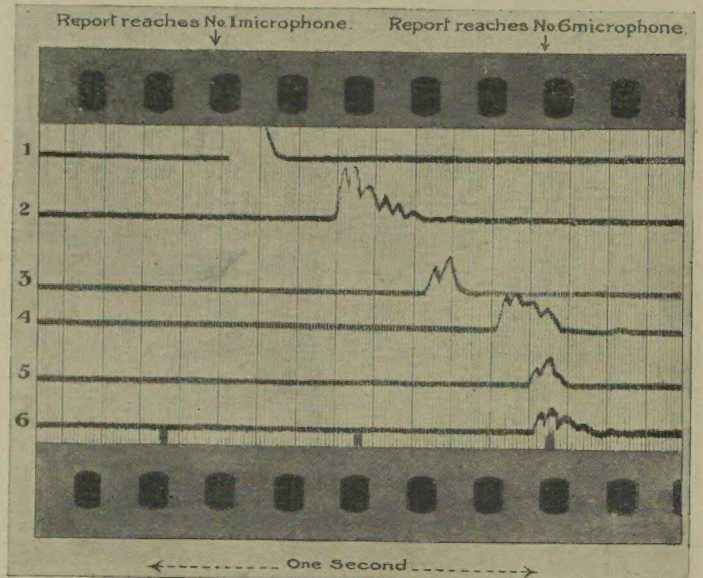


FIG. 15.—A PIECE OF FILM SHOWING THE EFFECT OF A 15-CM. GERMAN HOWITZER: A RECORD SHOWING THAT THE REPORT REACHED NO. 1 MICROPHONE FIRST AND NO. 6 LAST.

The film was moving from right to left while the record was taken. Time intervals are marked by vertical lines, 100 to the second, every 10th line being heavier. The horizontal lines represent shadows of the Einthoven strings, which lay across the slit behind which the film was exposed, and the movements of which are shown on the record.—[By Courtesy of “Nature.”]

to which the microphone is connected. The sound ceases if the fork is opposite to the edge of the mica sheet. There still remains a doubt as to which of the two opposite directions is correct. This was removed by the aid of a curious discovery: when a block of some non-resonant material having a small air cavity inside it is placed in a correct position on one side of the instrument, that side becomes deaf (Fig. 10). The instrument now hears on the other side only.

In the very extensive mining operations of the war listening instruments of a special type were employed in following the work of the enemy tunnellers. The small wooden box shown in Fig. 12 contained a heavy mass of lead or of mercury which nearly filled the box and was mounted on flexible supports of sheet mica. The air spaces above and below the mass were connected to the ear by tubes. When vibrations disturbed the box, pulses were set up in the air-spaces due to the relative

[Continued on page 381.]

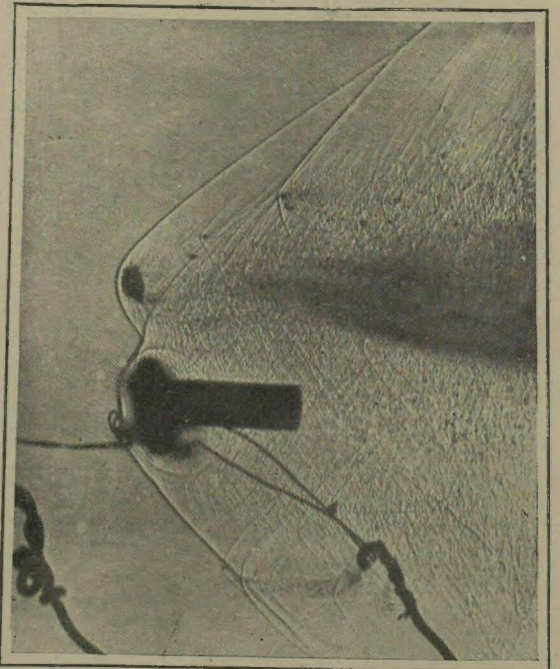
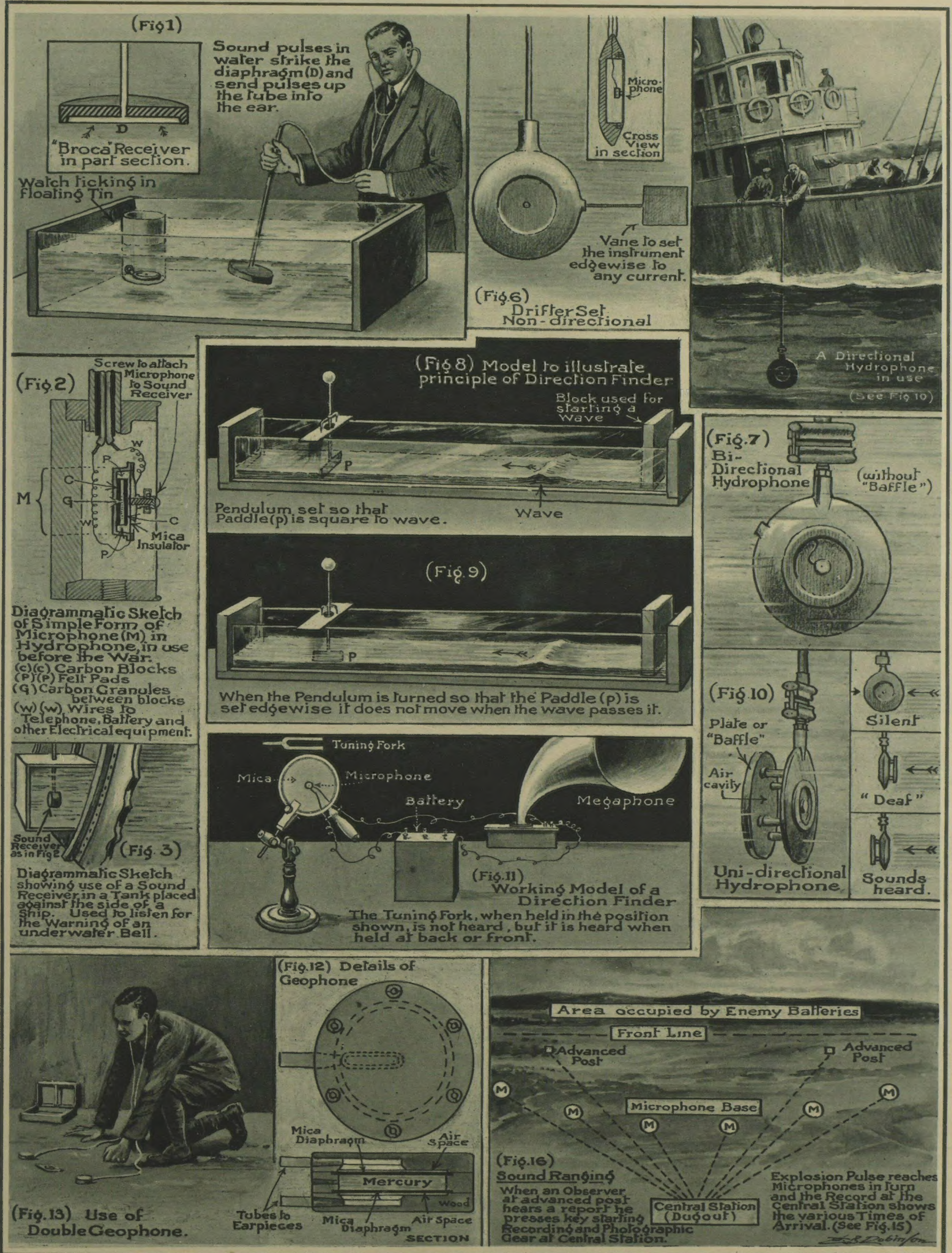


FIG. 18.—SHOWING V-SHAPED WAVES ON THE GLASS FRAGMENTS (TRAVELLING FASTER THAN SOUND): A BULLET JUST AFTER PENETRATING A SHEET OF GLASS.

Copyright Photograph by C. V. Boys.

THE WORLD OF SOUND: APPLIANCES THAT HELPED TO WIN THE WAR.

DRAWN BY W. B. ROBINSON FROM MATERIAL SUPPLIED BY PROFESSOR W. H. BRAGG, C.B.E., D.Sc., F.R.S., IN ILLUSTRATION OF HIS RECENT LECTURES.



VI.—SOUND IN THE WAR: LISTENING FOR SUBMARINES AND LAND-MINING OPERATIONS; SOUND-RANGING FOR THE GUNS.

The article on the opposite page concludes the series of abridgments, which Professor Bragg has written for us, of his remarkably interesting series of lectures, given originally to audiences of young people at the Royal Institution, on the World of Sound. This last division of the subject, "Sound in the War," is in many ways the most interesting of all, as it reveals the scientific principles underlying some of the wonderful mechanical appliances which contributed to victory both on land and sea. With regard to the diagram in the top right-hand corner, showing a hydrophone in use, it may be noted that the

listener has telephones attached to his head, while his hand is on a bar by which he turns the hydrophone for the purpose of direction-finding. A little metal arm with gimbals, details of which are too small to be shown in the drawing, holds the direction-finder away from the ship. Professor Bragg's previous articles, in our last five numbers, dealt successively with "What is Sound?" "Sound in Music," "Sounds of the Town," "Sounds of the Country," and "Sounds of the Sea." Messrs. George Bell and Sons are publishing his lectures in book form.—[Drawing Copyrighted in the United States and Canada.]

ART IN THE SALE ROOMS.

BY ARTHUR HAYDEN.

THERE is a poignant touch in reading the superscription of the catalogue of Messrs. Christie, Manson and Woods of the dispersal of "Fine old English Plate, the property of Field Marshal the Rt. Hon. Lord Methuen." It is the hand of Fate which scatters fine things which generations have gathered together. It is wise perhaps, after all, to forestall the hand of Death, who arranges things indisputably. At that last day when all men are equal—

Sceptre and crown shall tumble down
And in the dust be equal made
With the poor crooked scythe and spade.

And so it comes to pass that great collections with fine associations come into the market. It may be that the auction-room holds sad memories. But from another point of view it holds great possibilities. The fine heirlooms of our old nobility come into a greater world, the domain of art connoisseurship, of which Burke and the Court Guide have no cognisance. A great unknown picture by a great painter bursts upon the world. Is the world poorer? Masterpieces covert are masterpieces neglected. The rich guerdon of renown of the artists and artist-craftsmen is the claim they make upon posterity. With sanguine spirit one can only hope that those who are fortunate enough to possess these new heritages of the old dead past will allow such illumination to fall upon them as will enrich the art world. Photographs and the modern dissemination of art objects form a *motif* of a new age. We are all heirs of the past. If American millionaires buy our old heirlooms, let there be no hiding of masterpieces. It is not a matter of advertisement, but it is a question of dissemination of fine designs for the betterment of the designers of to-day.

All Englishmen love silver plate. The taste is in their blood. Perhaps they are insensibly proud of the great record of the Goldsmiths Company of London, where plate has been assayed as of standard value since the reign of Henry II. It was only during a portion of the reign of Henry VIII., the whole of the reigns of Edward VI. and Mary, and in the first years of Elizabeth, that the silver coin was debased and a token of its value. It is the tradition that the lion of the standard mark on silver plate was a challenge by the goldsmiths of London that the silver plate was

a stiff proposition in the rising value of silver, but standards of silver coinage are adamant, and the shilling should be worth a shilling. It is his business to see to this. To pour out silver coins from the Mint above their face value is as senseless as to turn out tokens.

The Methuen silver should have something more than a passing interest. Most of the plate of the Queen Anne period was made for John Methuen (1650-1706), who concluded the Methuen Treaty in 1703 with Portugal. The other silver plate of the George I. period belonged to Sir Paul Methuen (1672-1752), Ambassador to Portugal, 1706, and Controller of the Household, 1720.

But John Methuen and his silver must not be dismissed with a nod. He was a public benefactor. Besides concluding the treaty with Portugal, he did something more. It was he who gave the *corpus* to the eighteenth century. The Methuen Treaty with



ONE OF A PAIR SOLD FOR £2877: A GEORGE I. SILVER CUP AND COVER MADE BY PHIL. ROLLES IN 1714—FROM THE METHUEN COLLECTION.

Lord Methuen's family collection of old silver realised in all £33,096 at Christie's. The pair of George I. cups and covers, of which the above is one, are engraved with the Royal Arms and the King's cypher. They are 15½ in. high.

By Courtesy of Messrs. Christie, Manson and Woods.

Portugal, in the days of Queen Anne, was concluded in 1703. It is the shortest treaty on record, having only two clauses. One provided that Portugal should admit British cloths, the other that England should admit Portuguese wines at one-third duty less than those of France. This lasted till 1831, and so the English were made port wine drinkers.

This is an additional hall mark to the lion passant or the figure of Britannia and the lion's head erased to add to the ambassadorial silver just put under the hammer. But nobody has erected a statue to John Methuen, the man who introduced port wine into England. The eighteenth century drank deeply of the wine of Oporto. Addison and Steele, Charles James Fox, and later Charles Lamb and Tennyson, all found inspiration in the ruby red wine from Oporto. But all are silent. They drank the nectar and never inquired who was the benefactor. It was the drink of the eighteenth-century statesmen and squires and men of letters. Undoubtedly "The School for Scandal" was written on port, but never a word of John Methuen. When Sheridan saw his theatre at Drury Lane a-burning, he opened a bottle of port and drank as a spectator to the holocaust. When upbraided by a staid friend he retorted: "Cannot a man drink a glass of wine by his own fireside."

Port wine was forced on England in place of claret in 1703, and the drinking of it made an act of patriotism—which then meant hostility to France—by the Methuen treaty.

All the lore concerning wine from the wood and crusted port in the bottle dates from 1703. The eighteenth century was the age of port. The coasters in silver, the glass, and the other appurtenances of a fashionable cult are as pronounced as the tobacco or the snuff habit with its art adumbra.

At Messrs. Christie's the prices fetched for the Methuen collection of silver totalled £33,096. Collectors had a fine range of makers—Lewis Mettayer, 1714; George Garthorne, 1705; David Willaume, 1710; Pierre Harache, 1703; Paul Crespin, 1738; John

Backe, 1703; Benjamin Pyne, 1714; Peter Archambo, 1744; George Lambe, 1714; William Spring, 1714; Phil. Rolles, 1714; W. Garrard, 1748; and Paul Storr, 1796.

Twenty-four soup-plates of the George I. period, by Benjamin Pyne, 1720, brought £697. Three Queen Anne silver-gilt castors, the tops pierced with flowers and foliage and surmounted by cut-card work and small vases, by George Garthorne, 1705, fetched £358. A pair of George II. plain oval cream-ewers by Paul Crespin, 1738, went for £386. A Queen Anne circular side-board dish weighing 189 oz., and 25½ in. in diameter, by Pierre Harache, sold for £1033. Three George I. plain octagonal casters, with moulded borders and engraved with the royal arms and cypher of George I., by Lewis Mettayer, 1714, brought £1093. A Queen Anne dessert service by John Gibbons and Andrew Moore, 1703, with twenty-four plates with cups and covers and eight small tazze, in weight 985 oz., brought £6944.

Of unusual character, a pair of George I. cups and covers, silver-gilt, finely chased, with the royal arms and cypher of George I., by Phil. Rolles, 1714, brought £2877. One of these is here illustrated.

The *clou* of the sale was secured by Messrs. Crichton in the English Gothic cup and cover illustrated, of silver-gilt and rock crystal, surmounted by a crystal ball and silver-gilt serpent emblematic of Eternity.

Round the bowl, cover, and foot are the inscriptions:

GIF THAT THOU HES A FRIND OF LANG
SUPPOS HE SVMTIM DOV THE VRANG
OPPRES HIM NOT BOT ATH OF MEIN
THE KANDES THAT AFOR HAS BEIN.
MAL.

AT THI BURD QUAN THOU ART SET
THINK ON THE PUIR STANDIS AT THI ZET
LOVE GOD DO LAV KEIP CHERATI
SUA . SAL . AL GRACE ABOUNDAND BE.

QUE QUID AGAS SAPIENTER AGAS ET RESSPISE FINEM

in contemporary lettering. "7 in. high—middle of the 15th Century—maker's mark, Vh in a plain shield." The dispersal of the Methuen silver, the first great



SAID TO HAVE BEEN USED BY MARY QUEEN OF SCOTS AT HER LAST COMMUNION: A FIFTEENTH-CENTURY ENGLISH GOTHIC CUP—THE GEM OF THE METHUEN COLLECTION—SOLD FOR £3200.

At the sale of the Methuen silver at Christie's on February 25, this cup was bought for £3200 by Mr. Lionel Crichton. Some experts consider it of Scottish workmanship and to have come originally from Aberdeen.

By Courtesy of Messrs. Christie, Manson and Woods.

collection sold since the war, marks a new era in prices, and stands as a monument of post-war psychology and as a presage of future prices.



WITH STEM FORMED OF A CHINESE FIGURE: ONE OF A SET OF FOUR GEORGE II. TABLE-CANDLE-STICKS SOLD FOR £547.

The set of four George II. silver candlesticks were bought by Mr. S. J. Phillips, at the Methuen sale, for £547. They were made by John Cufe in 1749, and are 10 in. high.

By Courtesy of Messrs. Christie, Manson and Woods.

semper eadem, always of the same standard despite the debased coinage. To-day the Chancellor of the Exchequer proposes to debase the coinage for the first time in six hundred years. We admit he is up against

DANZIG A FREE CITY: THE ENTRY OF BRITISH AND FRENCH TROOPS.

PHOTOGRAPHS BY TRAMPUS, PARIS; AND SENNECKER, BERLIN.



THE ENTRY OF BRITISH TROOPS INTO DANZIG, NOW A FREE CITY: A COLUMN COMING THROUGH THE "GREEN GATE."



BRITISH TROOPS MARCHING THROUGH THE STREETS OF DANZIG: AN OCCASION OF GREAT INTEREST TO THE CIVILIAN POPULATION.

A SECTION of the Peace Treaty relating to "the Free City of Danzig," and defining the boundaries of its territory, says: "Germany renounces in favour of the Principal Allied and Associated Powers all rights and title over the territory comprised within the following limits: From the Baltic Sea southwards to the point where the principal channels of navigation of the Nogat and the Vistula (Weichsel) meet: the boundary of East Prussia as described in Article 28 of Part II: . . . thence the principal channel of navigation of the Vistula downstream to a point about 6½ kilometres (4 miles) north of the bridge of Dirschau; thence north-west to point 5,

[Continued opposite.]

FLYING THE UNION JACK: THE G.H.Q. IN DANZIG, A BASE FOR ALLIED TROOPS IN PLEBISCITE AREAS.

Continued.

1½ kilometres south-east of the church of Güttland: a line to be fixed on the ground; thence in a general westerly direction to the salient of the Kreis of Berent 8½ kilometres north-east of Schöneck"—and so on. There is not room here to quote the whole Section. The boundary, as described above, begins at a point on the Baltic coast slightly east of Danzig. From Schöneck the remainder of the boundary passes, by way of two lakes—the Lonkenzer See and the Pollenziner See—to a point on the Baltic coast near the towns of Oliva and Zoppot, west of Danzig. The frontier of the free territory has thus, it will be seen, completely encircled the city on the land side.



COMMANDING IN PLEBISCITE AREAS: GEN. HAKING (RIGHT), WITH GEN. DUPONT (LEFT), INSPECTING FRENCH TROOPS IN DANZIG.



BRITISH MILITARY POLICE AT THE GREEN GATE: PATROLLING DANZIG, THE OLD CITY OF THE TEUTONIC KNIGHTS.

Under the Peace Treaty, Danzig has been made a free city within its own territory, whose boundaries are given in the section of the Treaty quoted above. The High Commissioner there is Sir Reginald Tower. The troops of occupation for the plebiscite areas are under the command of the British General Haking, who arrived in Danzig, with his family, on January 30, and took over the command from General Malachowski. General Haking stated that the British troops would be quartered at Danzig, which would serve as a base

and port of supply for the Allied forces in the various plebiscite districts. A French force arrived there on February 18. It was reported recently that the British light-cruiser "Danae" and the destroyer "Sturdy" were at Danzig. In the fifteenth century the town was called, from its prosperity, "the Venice of the North." In the fourteenth century it belonged to the Teutonic Knights and joined the Hanseatic League. It was captured by the Prussians in 1793, by the French in 1807, and reverted to Prussia in 1814.

SUBSTITUTES FOR LIVING MEN AND WOMEN ONCE BURIED

BY COURTESY OF MR. GEORGE EUMORPOULOS AND THE

WITH THE DEAD: CHINESE POTTERY OVER 1000 YEARS OLD.

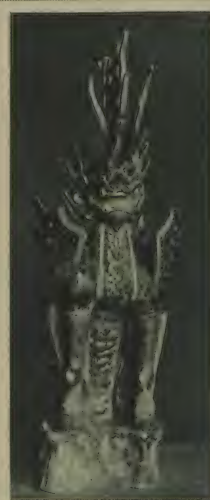
VICTORIA AND ALBERT MUSEUM. CROWN COPYRIGHT RESERVED.



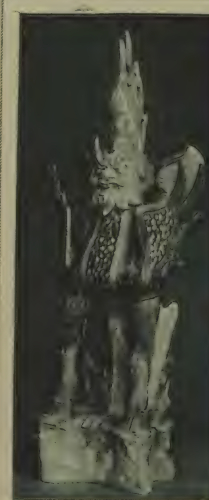
AN EARTHENWARE FIGURE FROM A CHINESE TOMB OF THE T'ANG DYNASTY (A.D. 618-906): A BUDDHIST PRIEST.



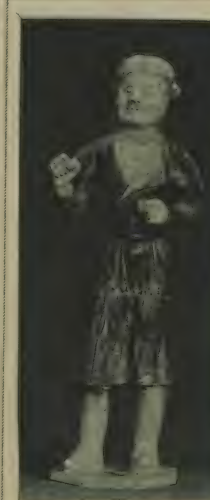
ONE OF THE GUARDIANS OF THE FOUR QUARTERS OF THE UNIVERSE?



"APPARENTLY A BENEFICENT LOCAL SPIRIT": A SEATED MONSTER.



"A SPHINX-LIKE BEING WITH A HUMAN HEAD": ANOTHER GUARDIAN SPIRIT.



"THE CHINESE INTERRED WITH THE DECEASED HIS SERVANTS": A GROOM.



FOR A DEAD EMPEROR? A CAMEL LADEN WITH "A WINE-JAR AND FLASK, A SIDE OF BACON, AND A PHEASANT."



FROM A CHINESE TOMB (PERHAPS IMPERIAL) EXCAVATED IN 1918: A FIGURE OF A HORSE BURIED WITH THE DEAD.



BURIED WITH THE DEAD TO SUPPLY HIS SPIRITUAL NEEDS IN THE NEXT WORLD: A FIGURE OF A BUDDHIST PRIEST.

These examples of ancient Chinese pottery were all found (with five others) in one tomb of the T'ang Dynasty, which lasted from A.D. 618 to A.D. 906. They belong to a series of fifteen earthenware figures which have been recently lent to the Victoria and Albert Museum by their owner, Mr. George Eumorphopoulos. The set of thirteen was excavated from the same tomb in 1918, and sets from a single grave are extremely rare. From the number and size of the figures it is considered probable, although not proved, that the tomb was that of a Chinese emperor. The figures average 3 ft. in height, whereas the ordinary size is under 12 inches, and 2 ft. is an exceptional measurement. We have not illustrated the whole set, as

some of those omitted are almost identical, except for the heads, with those we have given, and by reducing the number we have been able to give them on a larger scale. - In the case of the camel laden with provisions for the deceased, it may be noted that, while the side of bacon is visible in the photograph, the pheasant does not appear: probably it is on the other side of the camel's back. Such figures were used as substitutes for the living men and women whom it was once customary in China to bury with their dead master. An article on the subject, by Mr. William King, will be found on another page, with photographs of the two figures not belonging to the set of thirteen, and heads of three further figures from that set.

OVER TEN CENTURIES OLD: CHINESE POTTERY FIGURES FROM TOMBS OF CHINA'S "GOLDEN AGE."

By WILLIAM KING.

MR. GEORGE EUMORFOPOULOS has kindly lent to the Victoria and Albert Museum a series of fifteen earthenware figures from Chinese tombs of the T'ang dynasty (A.D. 618-906). They are now on exhibition on the ground floor of the Museum, in the Loan Court (Room No. 40).

The belief in a life after death is very widely spread among primitive peoples. It often impels them to provide for the future welfare of the dead by burning or burying with their bodies a supply of food and drink for use in the next world. Our own knowledge of most early pottery is, in fact, derived from the fortunate excavation from former cemeteries of the vessels in which such offerings were once contained. But even in the next world man does not live by food and drink alone, and the primitive Chinese had the further custom of interring with the deceased his wives, servants, horses, cattle, and other possessions. With the passing of years, the advent of humaner standards brought a general condemnation of this practice. Students of early Chinese art have reason to be grateful for the change of feeling, which resulted in living men and women being replaced by earthenware representations. By the time of the T'ang dynasty this substitution had already been established for several centuries. The quantity of objects allotted to an individual grave depended naturally on the position, in life, of its tenant. Where a poor man might only be able to afford a single bowl of rice, an emperor would be buried with a retinue of fifty or more figures, including representations of the ladies of his harem, his generals and ministers, his bodyguard and domestic servants, and even his musicians and actors. In addition to riding and draught animals and numerous other adjuncts of the farm or

household, there exists a large class of figures of supernatural beings, doubtless embodying a prayer for their assistance against the evil spirits and other dangers of the world to come.

An important feature of the figures of Mr. Eumorfopoulos' loan is that no fewer than thirteen were excavated in 1918 from the same tomb. Sets from a single grave are still of the utmost rarity, but the present group is further distinguished by the statement, which remains as yet without confirmatory evidence, that it was part of the furniture of an Imperial tomb. If this statement is true, the series is indeed unique, and its truth is rendered very probable by the unusual size of the figures. These average a full three feet in height, whereas it is usually the exception for

at first sight like a fairy jockey. Unfortunately for purposes of comparison, the two-humped Bactrian camel is a slow-moving beast and is used for transport only, while a closer inspection lends no colour to the theory of his rider's supernatural origin; he is probably merely a camel-boy.

As recently as twenty years ago the pottery of the T'ang dynasty was virtually unknown in Europe. Its absence from European collections, and the lack of references to it in the very voluminous Chinese ceramic literature, had combined to form the belief that little or none had survived. The extensive railway cutting that marked in China the opening years of the twentieth century, happily laid bare countless cemeteries which were found to contain large quantities

of the pottery of this and earlier periods. The better-known wares of later times were not represented, for, after the T'ang dynasty, wood took the place of earthenware as the material for grave furniture. The revelation of T'ang pottery proved no disappointment to students already accustomed to regard this period as the golden age of Chinese literature and familiar with its achievements in painting and kindred arts. Quite apart from the very considerable technical skill of which the T'ang potters were masters, it is remarkable

to see the high degree of finish and the plastic beauty of many of these vessels and figures, destined as they were for the ignominious fate of burial for ever at the very moment of their completion. The series now in question is a striking example, whose value, whether archaeological or æsthetic, it would be difficult to over-estimate. Mr. Eumorfopoulos has earned the gratitude of all lovers of art for so generously providing the nation with this opportunity of inspecting his remarkable loan at the Victoria and Albert Museum.



T'ANG DYNASTY CHINESE EARTHENWARE: HEADS OF TWO GROOMS (LEFT AND RIGHT) AND ONE OF THE GUARDIANS OF THE FOUR QUARTERS OF THE UNIVERSE (CENTRE).

We give the heads only, as the bodies are similar to figures on our double-page. They were all in one tomb. The two below came from other tombs.—[By Courtesy of Mr. George Eumorfopoulos and the Victoria and Albert Museum. Crown Copyright Reserved.]

a figure to measure much over two feet, the most ordinary size, indeed, being under twelve inches. Mr. Eumorfopoulos' objects have a body of buff-coloured earthenware, painted with green and brownish-yellow glazes. Like all such figures, they were made in moulds, and most of them are hollow with a cavity underneath. The set of thirteen comprises two Buddhist priests, two horses, two Bactrian camels, three grooms, two seated monsters, and two gods in armour, each standing on a bull. The last-named may represent two of the

Guardians of the Four Quarters of the Heavens, whose worship appears to have been introduced into China, together with Buddhism, in the early years of the Christian era. Their presence in a grave gives it the symbolic character of a miniature universe, and is reckoned of the highest importance by the Chinese, who are passionately devoted to astrology. The seated monsters are apparently beneficent local spirits; one is a sphinx-like being with a human head. One of the camels is carrying a pack-saddle, on which may be seen a wine-jar and flask, a side of bacon and a pheasant, a symbolic provisioning of the dead emperor for his life in the next world. It may be observed that the flask belongs to a family of which several specimens are known; they are decorated in relief with Bacchic figures of a type showing strong Greek influence, an influence transmitted from India and doubtless a result of the conquests of Alexander the Great in the fourth century B.C. Exhibited in the same case is a similar object from another tomb of the period; it represents an archer standing on a bull, and is probably to be identified with Yen-mo, the Chinese form of Yama, the Buddhist god of death. The final item of Mr. Eumorfopoulos' loan is a Bactrian camel, ridden by a strange little man in a pointed hat, who looks



"AN ARCHER STANDING ON A BULL . . . PROBABLY YEN-MO (THE CHINESE FORM OF YAMA), BUDDHIST GOD OF DEATH": AN EARTHENWARE FIGURE FROM A TOMB OF THE T'ANG DYNASTY.

By Courtesy of Mr. George Eumorfopoulos and the Victoria and Albert Museum. Crown Copyright Reserved.



"RIDDEN BY A STRANGE LITTLE MAN IN A POINTED HAT, WHO LOOKS AT FIRST SIGHT LIKE A FAIRY JOCKEY": A BACTRIAN CAMEL, IN ANCIENT CHINESE POTTERY (A.D. 618-906).

By Courtesy of Mr. George Eumorfopoulos and the Victoria and Albert Museum. Crown Copyright Reserved.

A TOWN MOVED TO THE RAILWAY! OCHILTREE CROSSING THE PRAIRIE.

DRAWN BY H. W. KOEKKOEK AFTER AN ILLUSTRATION IN "POPULAR MECHANICS."



"EVERY BUILDING . . . HITCHED TO A TRACTOR AND PULLED ACROSS THE PRAIRIE TO A NEW SITE":
THE ASTONISHING MIGRATION OF OCHILTREE, IN TEXAS.

The transference of a single building from one place to another, by means of rollers and tractors, has occurred before now, and we have illustrated some such occasions in these pages. "Yet [we quote "Popular Mechanics"] when every building in a village of 300 inhabitants is hitched to a tractor and pulled across the prairie to a new site, astonishment is excusable. . . . The little town of Ochiltree, in Texas, was disappointed

in a lifelong ambition when a new railroad across its country passed it by, and went, instead, through a still smaller but rival settlement to one side. It did not take long for an indignant committee of the whole town to determine to emulate Mohammed, and take Ochiltree bodily to the railroad. And so, with the aid of all the tractors available the town moved over.—[Drawing Copyrighted in the United States and Canada.]

BOOKS OF THE DAY

By E. B. OSBORN.

I HAVE been searching for a book which will give me a true picture of the victorious France that has emerged from her latest life-and-death struggle with Germany. The best

I can find is "MY SECOND COUNTRY (FRANCE)" (John Lane; 7s. 6d. net), by Robert Dell, an author whose conclusions are vitiated, unfortunately, by too keen a sympathy with revolutionary tendencies in both his countries. I am not acquainted with Mr. Dell's *dossier*, but I have read articles from his pen which convinced me that he is not a trustworthy guide to the political life of either France or Great Britain, being inevitably the victim of the very weakness he imputes to the people of his second home—"the notion that, when one has a fine idea and has expressed it in fine language, one has done all that is necessary." His dangerous zeal for the political philosophy of Marx and Engels causes him to ignore the profound conservatism of the French, whose type of Latin civilisation has survived in essentials the invasions and vicissitudes of twenty centuries. Above all, the institution of private property is so deeply rooted in that even the most audacious spirits of the French Revolution never thought of attacking it, and it is unlikely that the economic heresies of German Jews will prevail against it. Curiously enough, Mr. Dell admits here and there that the conservatism of the essential France, as distinguished from Paris with its hordes of *déracinés* and cosmopolitan pleasure-seekers, is ineradicable. Thus he tells us that one of the chief obstacles to the real understanding of France is the great difference between the various classes—bourgeois, peasants, and workmen—on the one hand, and the various parts of the country on the other. "The ancient provinces," he justly observes, "though abolished legally, survive in fact and are inhabited by different races. The old national patriotism—the attachment of a man to the village or the town or the province where he was born—has not been eradicated by the mystical patriotism invented by the Revolution. Again, in no country is the difference between the classes so great as in France; the gulf between the bourgeoisie and the proletariat is so wide that they are almost like two nations." To the last sentence exception must be taken, for the French peasantry, which is a huge class of petty proprietors, cannot be said to form part of a proletariat (defined by Marx and Engels as "that class of modern workers who have no means of subsistence except in so far as they find work, and who find work only so far as the work is profitable to capitalists"), nor, again, is the term applicable to the town workers, probably a majority of their class, who have saved money, whether it be invested or kept at the bottom of an old stocking. There does not exist in France the large propertyless class which is a social danger in so many other lands. But it is quite correct to think of France as inhabited by standardised types of thrifty toilers, in all of whom the love of some favoured patch of soil, howsoever long relinquished, is the root of a patriotism which, like so many noble French wines, has its peculiar body and bouquet.

The more France changes politically, the more she will be the same ancient and glorious France, mistress

of all the arts and, in a singular degree, of the art of living. When Mr. Dell emerges from the cloud of Teutonic 'ics and 'isms which blinds him to the true outlines of the political situation in France and causes

him to believe in the possibility of a "dictatorship of the proletariat," he gets bright glimpses of the eternal verities. He sees, for example, that the mission of the French is to provide the world with ideas, and that the only aristocracy that counts in France is the aristocracy of intellect. When, in England or any other country, has a great man of letters been the object of such popular adoration as was given to Victor Hugo and

cemetery and lays violets on the tomb of Abélard and Héloïse in Père-Lachaise. What parallel to these pretty observances can be found in London life? Mr. Dell gives these examples, two out of innumerable instances of the average Frenchman's worship of genius and his passionate respect for intellectual superiority. But, when he insists on our accepting the saying of Anatole France, that great master of irony, that "La France, de Voltaire et de Montesquieu—celle-là est la grande, la vraie France," he shows himself as incompetent a guide to French literature as he is to French politics.

"TWENTIETH CENTURY FRENCH WRITERS" (W. Collins Sons; 7s. 6d. net), which is a volume of reviews and reminiscences by Madame Mary Duclaux, is a far better introduction to the two literary principalities of France. France has, in fact, two parties in literature and two cities of the soul which they occupy—the city of the *bien-pensants* and the city of the *intellectuels*. "You may be illustrious in one group," observes Mme. Duclaux, "and barely heard of in the other. Those who adore Anatole France and praise Romain Rolland smile sarcastically at the name of Barrès and have never opened a book by Paul Claudel. And, of course, it is the same the other way round—only more so." In her choice of subjects, however, this critic has preferred the daring apostles of Life who cultivate movement and liberty rather than Art; freedom of rhythm rather than classic constraint; all those who can say with the Abbess Hildegard (and with Bergson), *Symphonialis est anima*. Thus one of her chief favourites (and mine also!) is the Comtesse de Noailles, whose lyric muse—

All a wonder and a wild desire—

has achieved loftier flights towards the sun than those of any French poet or poetess of her generation. Assuredly she is a great poet, more virile than feminine—the greatest that the Twentieth Century has produced in France, perhaps in Europe. The sunset of Nineteenth Century romanticism fills her verse with crimson splashes and "a green sky's minor thirds," and her ardent magnificence, her young sense of wonder, her vast horizons magically evoked, her lyric cries, her sudden relapses into homely simplicity and friendliness, recall the primal genius of Victor Hugo. In her essay on the amazing work of the former Princess Anna de Brancovan, and in all the others indeed, Mme. Duclaux ranges herself on the side of unconquerable youth, and, knowing that no men—not even Frenchmen—are governed by logic, least of all by the inhuman reasoning of Marx and Engels, she has no fear of the future for her beloved France.

And it is in the words of the Catholic Claudel—"Il ne faut pas comprendre; il faut perdre connaissance"—that she finds an expression of the mystical faith of

Twentieth Century French writers who, though they set a high value on action and social energy, yet have the intuition of truth transcending reality. And this reaction on a wide front against the stark individualism and self-sufficient rationalism of the preceding century is not surprising if we remember what Mr. Dell has forgotten, if he ever knew it—that France is not

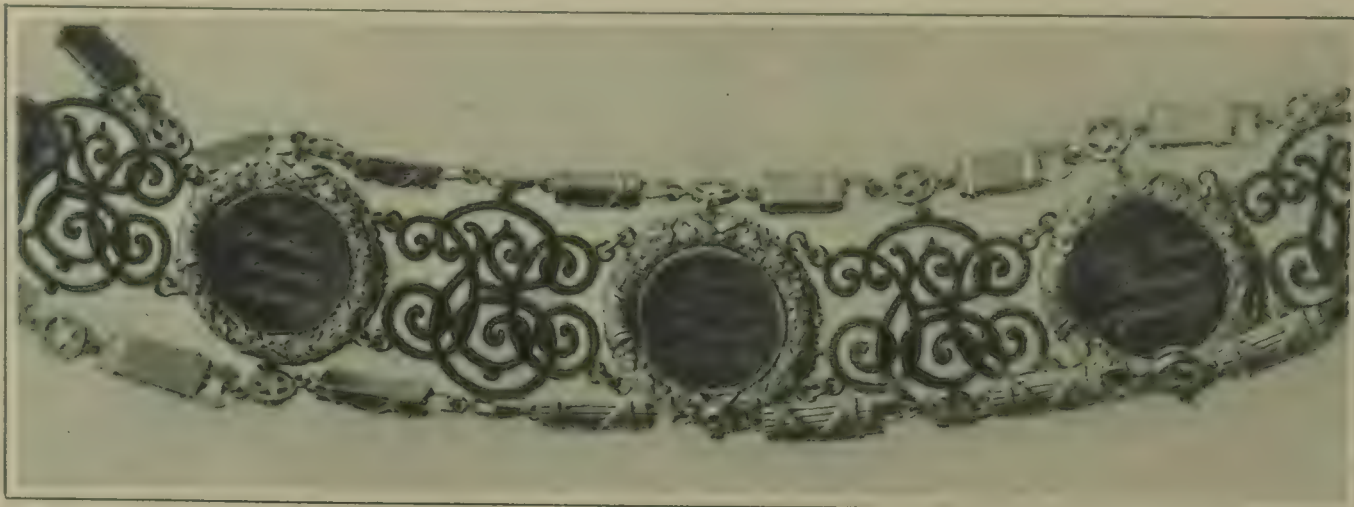
only Latin but also Celtic, a land of saints as well as men and women of the world, and that Pascal and Fénelon, Vincent de Paul and Jeanne d'Arc, are as characteristically French as Voltaire and Montesquieu.



CONFERRED ON EACH NEW PRESIDENT OF FRANCE ON HIS INVESTITURE: THE GRAND COLLAR OF THE LEGION OF HONOUR—NOW HELD BY M. PAUL DESCHANEL.

M. Deschanel was invested as President at the Elysée on February 18, and received the Collar of the Grand Master of the Legion of Honour, which is handed to each new President on the day of his investiture. Eight of the 17 medallions (beginning with the central one at the top and descending alternately to right and left) bear already the names of Presidents who have succeeded Jules Grévy. On the right are the names of Casimir-Périer, Emile Loubet, and Raymond Poincaré; on the left, those of Sadi Carnot, Félix Faure, Armand Fallières, and Paul Deschanel.

Béranger, who could not walk the streets of Paris without being virtually mobbed? Where, except in Paris, would a taxi-driver refuse to take his fare from



SHOWING THE NEW PRESIDENT'S MEDALLION ON THE LEFT: A SECTION OF THE GRAND COLLAR OF THE LEGION OF HONOUR.

These three medallions (from left to right) bear the names and dates of Paul Deschanel (the new President), Armand Fallières, and Félix Faure.

a famous author, saying that it was enough to have had the honour of driving M. Anatole France? The Parisian *midinette* goes on pilgrimage to the grave of the original Lady With the Camellias in the Montmartre

Natural Colour Photography in the Antarctic and Macquarie Island.

FROM PAGET COLOUR PHOTOGRAPHS TAKEN BY P. E. CORRELL DURING SIR DOUGLAS MAWSON'S AUSTRALIAN ANTARCTIC EXPEDITION: ONE REPRODUCED FROM SIR DOUGLAS MAWSON'S BOOK, "THE HOME OF THE BLIZZARD," BY COURTESY OF THE PUBLISHER, MR. WILLIAM HEINEMANN.



AT MACQUARIE ISLAND: A YELLOW-CRESTED VICTORIA PENGUIN ON THE NEST.



THE HILL-SLOPES CLOTHED IN TUSOCK GRASS AND ENVELOPED IN MIST: MOUNTAIN SCENERY ON MACQUARIE ISLAND.



MARINE MARVELS FROM THE ANTARCTIC OCEAN DEPTHS: A SOFT AND JELLY-LIKE DEEP-WATER FISH FROM A MUD BOTTOM AT 350 FATHOMS OFF QUEEN MARY LAND.



ANTARCTICA IS A WORLD OF COLOUR, BRILLIANT AND INTENSELY PURE": PACK ICE OFF KING GEORGE V. LAND—A NATURAL COLOUR PHOTOGRAPH.

These remarkable natural colour photographs of the far South were taken during the Australian Antarctic Expedition (1911-14), under Sir Douglas Mawson, and the first (a penguin on her nest) appears in his book, "The Home of the Blizzard"—a story of absorbing interest. The photographer of the Expedition was Captain Frank Hurley. "Special Lumière plates," an Appendix says, "and material for colour photography were not omitted, and, during the final cruise of the *Aurora*, P. E. Correll employed the more

recent Paget process for colour photography with good results." Sir Douglas Mawson writes: "Antarctica is a world of colour, brilliant and intensely pure." In his description of Macquarie Island (in the South Pacific) recently made a sanctuary for Antarctic fauna, Sir Douglas says: "The hill-sides are deeply ravined and the slopes covered with a dense growth of tussock, which renders progress uncertain and laborious." During the Expedition some wonderful new forms of marine life were dredged from the sea depths.

AWARDED BY TREATY TO NORWAY, BUT ITS MINERAL RESOURCES MAINLY BRITISH: SPITSBERGEN—A GLACIER FACE.

PHOTOGRAPH BY HERBERT G. PONTING, F.R.G.S., AUTHOR OF "IN LOTUS-LAND: JAPAN," ETC.



MARKED LIKE MARBLE, WITH MORAINIC MATTER: A GLACIER FACE IN SPITSBERGEN, WHERE "SOME OF THE GRANDEST GLACIERS IN THE WORLD" END IN STEEP CLIFFS.

The Spitsbergen Treaty, signed by the British Ambassador at Paris on February 16, gives the sovereignty of Spitsbergen to Norway, but (as stated in the House of Commons recently) it "contains the most careful provisions for the protection of British enterprises, entitling them to "the same privileges as those enjoyed by the nationals of any other Power, including Norway. According to recent figures quoted in Parliament, British interests affect 75 per cent. of the total areas claimed in Spitsbergen by all nationals. The date for the signing of the Treaty by the Dominion High Commissioners has been extended to April 7. It was announced recently that, if the Dominion Governments agree, the Treaty would be published forthwith. With regard to his photograph above, Mr. H. G. Ponting writes: "There are some of the grandest glaciers in

the world in Spitsbergen. Formed by the precipitation of the winter snow, these great ice-rivers flow along the mountain valleys to the sea, where they terminate in precipitous cliffs often a hundred feet or more in height. The marble-like markings in the ice are due to the presence of quantities of morainic matter, dirt and gravel, which, falling from the mountain sides, gradually becomes interspersed throughout the entire mass of ice." Real marble is also found in this favoured land. Mr. Ponting says: "The largest deposit of coloured marble known in the world is at King's Bay, and a number of quarries, which would have been opened up several years ago but for the war, are now to be developed by an English company." Mr. Ponting points out, in an article on a later page, the immense industrial potentialities of Spitsbergen.

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A MINERAL EL DORADO: COAL STRATA AND ASBESTOS IN SPITSBERGEN.

PHOTOGRAPHS BY HERBERT G. PONTING, F.R.G.S., AUTHOR OF "IN L-HUS-LAND: JAPAN," ETC.



"VISIBLE FOR MILE AFTER MILE IN THE MOUNTAIN SIDES": COAL-BEARING STRATA IN THE SPITSBERGEN HILLS AT LOWE SOUND.



"A TREMENDOUS AMOUNT OF PROSPECTING HAS BEEN DONE IN SPITSBERGEN": EXPERTS AT RECHERCHE BAY EXAMINING ASBESTOS.

"The strata containing the Tertiary seams of steam coal," writes Mr. H. G. Ponting, "are one of the most remarkable geological features of Spitsbergen, and at Lowe Sound and other places are visible for mile after mile in the mountain sides. The proximity of the coal to deep water is shown in the photograph, the wharf being but a few hundred yards from the coal dump. The seams in the mountains across the bay have not yet been opened up. There is an unlimited market for Spitsbergen coal in Scandinavia and

North Russia, the nearest Norwegian port being less than 500 miles from Lowe Sound. A tremendous amount of prospecting has been done in Spitsbergen during the past three years. In the lower photograph experts are seen examining asbestos at Recherche Bay. Lead, copper, gypsum, molybdenum, and other minerals have been found; also gold and silver. From the presence of oil shale and natural gas, only recently analysed, there is every reason to hope that Spitsbergen may become a great oil-producing country."

Spitsbergen: A Potential Source of Imperial Wealth.

BY HERBERT G. PONTING, F.R.G.S.

SPITSBERGEN is a land not only of untold undeveloped mineral wealth, as has now been abundantly proved, but a land of great natural beauty. I make this claim not as a mere tourist, but as a world-wide traveller and observer who has made the illustrating of foreign lands one of the main objects of his life.

Before I went to Spitsbergen, during nearly twenty years of travel I had used my inseparable cameras in nearly every conceivable climate, from that of the highest Alpine peaks to the Himalayas; from the plains of Bengal and the sun-kissed shores of the Pacific to the Steppes of Siberia and Manchuria (I was a correspondent with the First Japanese Army during the war with Russia); and from the swamps and jungles of the Tropics to within eight hundred miles of the South Pole. Having thus seen and illustrated some of the farthest corners of the earth and wonders of the world, I was not likely to be carried away with unsophisticated wonder at anything novel or unusual. Moreover, as in my younger days I had spent several years gold-mining in California, I was able to estimate what I saw in Spitsbergen not only through the perspective of many years of travel, but as a practical miner. With this experience behind me, I am glad to be able to endorse the testimony about this land of promise of such well-known authorities as Dr. William S. Bruce, of Antarctic fame, and of Dr. Rudmose Brown, whose recently published book, "Spitsbergen," is an indispensable encyclopædia of information for anyone interested in potential sources of Imperial wealth.

Many people think that, because Spitsbergen is in the Arctic, it is necessarily an ice-bound land which for six months of the year is enveloped in night. This is far from the truth, and nothing could be more misleading than articles that I have recently read—obviously written by those who have never been in the Arctic—disseminating such misinformation.

In the latitude of Spitsbergen the period of continuous night in winter is about three months, part of which time it is twilight; and the darkness, moreover, is frequently dispersed by the brilliant moonlight and aurora displays. To more than compensate, there are three months of continuous daylight in the summer, when the sun never sets, and for a few weeks is almost as high at midnight as at noon. These months, June, July, and August, are months of sheer delight, for during this period the climate of Spitsbergen is probably the most exhilarating on earth. There is also a long period of summer twilight night.

No other place in the Eastern Hemisphere can compare with Spitsbergen's magic summer, nor can Alaska in the West, for Alaska's summer is burning hot, whereas Spitsbergen's is soft and temperate as May at an Alpine resort. Only in Spitsbergen, however, can one experience the benefit of constant sunlight, day and night, combined with the extraordinarily rejuvenating effect of mountain, sea, and glacier air.

Spitsbergen even in the coldest months is not nearly so cold as Winnipeg, Montreal, or even New York in winter, as the thermometer rarely falls under twenty degrees below zero (Fahr.) I have experienced it much colder than that as far west as Chicago, yet work went on the same as usual and no one seemed to notice it. Work is carried on in Spitsbergen in winter, just as it is in the cold parts of Canada and the United States. At the Swedish settlement at Braganza Bay the mining officials have their wives and children. One of these women told me it was much colder in winter in Sweden, and she scorned the

idea of the winter darkness holding any terrors. The invigorating climate of Spitsbergen and the magnificent scenery of the fiords and glaciers brought thousands of visitors from Norway, Sweden, and Germany in the years just preceding the war. The German pleasure cruises were made by two of the largest Hamburg-American liners. The ships entered the fine fiords and bays, and anchored by the magnificent glaciers, and the holiday-makers went off hunting for wildfowl or picnicked by the towering ice-cliffs. When

should have a free hand in the development of Spitsbergen?

Spitsbergen is very different from the Antarctic, whose possible, but as yet quite unproved, mineral resources can never become of any economic value, for that inhospitable land is not only at the uttermost end of the earth, and separated from Great Britain by more than one-third of the circumference of the globe, but to reach it one must risk the dangers of the most perilous, tempestuous, and ice-scattered seas in the world, in ships specially built for the purpose; and, having reached it, find a climate which is the most frigid and boisterous on earth. Spitsbergen, with its temperate summer climate, thanks to the Gulf Stream, is almost at our doors. It is within five days' voyage by tramp steamer from the Tyne, and its mineral riches have been abundantly proved.

Two British enterprises, one English and the other Scottish, own about eighty-five per cent. of the entire proved mineral areas of the country, and now that the war is over and shipping and expert workers are again available, both concerns are about to put forth all possible effort to develop them. In addition to the territories that these concerns owned before the war, both of them reported fresh discoveries of further great coal areas last year, and the largest known deposit of coloured marble in the world was proved by the English company's experts. At Recherche Bay iron ore of great richness has been found, and the discovery of the mother lode should be but a matter of time. Asbestos deposits are now being opened up in the same region, and last October a find of rich copper-ore was made in this district. Lead, molybdenum, and other minerals have been found, and also excellent prospects of gold and silver. The Scottish company has proved the existence of large deposits of gypsum, and also of oil-bearing shale; whilst a recent analysis of natural gas from one of the territories of the English enterprise seems to indicate beyond question the existence of petroleum. With a world shortage of oil before us, there is every reason to hope that the present year will see Spitsbergen proved to be the nearest oil-bearing country to Great Britain.

In a recent interview, the Arctic explorer V. Stefannsen is reported as stating: "There are unlimited quantities of iron ore in Spitsbergen, and there are only three places in the world that could produce such a fine quality of iron. One is Pittsburg, Penn.; another is Birmingham, Alabama; and the other is Spitsbergen itself. Before long Spitsbergen will become another Pittsburg."

When the mother lode of the iron is discovered,

Stefannsen's vision may be realised, for, with coal in abundance at hand, and with limestone for fluxing, it is not unlikely that Spitsbergen may become an export country for steel. The present year will probably see the début of the aeroplane in Spitsbergen exploration. The English company already has a large machine at Tromsø, in north Norway—less than five hundred miles from Spitsbergen—which it is intended to use this summer. Though only the fringe of the country has as yet been prospected, vast mineral resources have been proved. As the Foreign Office has given assurance that British interests are thoroughly safeguarded in the new treaty that gives Norway the sovereignty over Spitsbergen, this treasure-land of the North is destined to play an important part in solving the problems which face Great Britain in the future, for coal and iron are the main foundations on which the commerce of the world is founded, and on which the British Empire rests.



WHERE THE SEAMS ARE HORIZONTAL IN THE HILLS AND SHAFTS ARE NEEDLESS: AN ADIT TO A COAL-MINE IN SPITSBERGEN.

Spitsbergen is rich in coal, which lies, not deep in the earth, but in almost horizontal seams high up in the hills; so that costly shafts are unnecessary. The coal is mined on the "adit" system, with tunnels into the hill-side. The seams are worked on the rise, so water finds its way out without pumping. Laden trucks can be pushed down the light gradient by hand.—[Photograph by H. G. Ponting, F.R.G.S.]

shipping again becomes more normal, a trip to Spitsbergen will be regarded as one of the finest and most health-giving excursions in Europe, for the islands are undoubtedly destined to become one of the great summer playgrounds of the world.

But was it climate alone that caused Germany to demand, in the Brest-Litovsk Treaty, that she

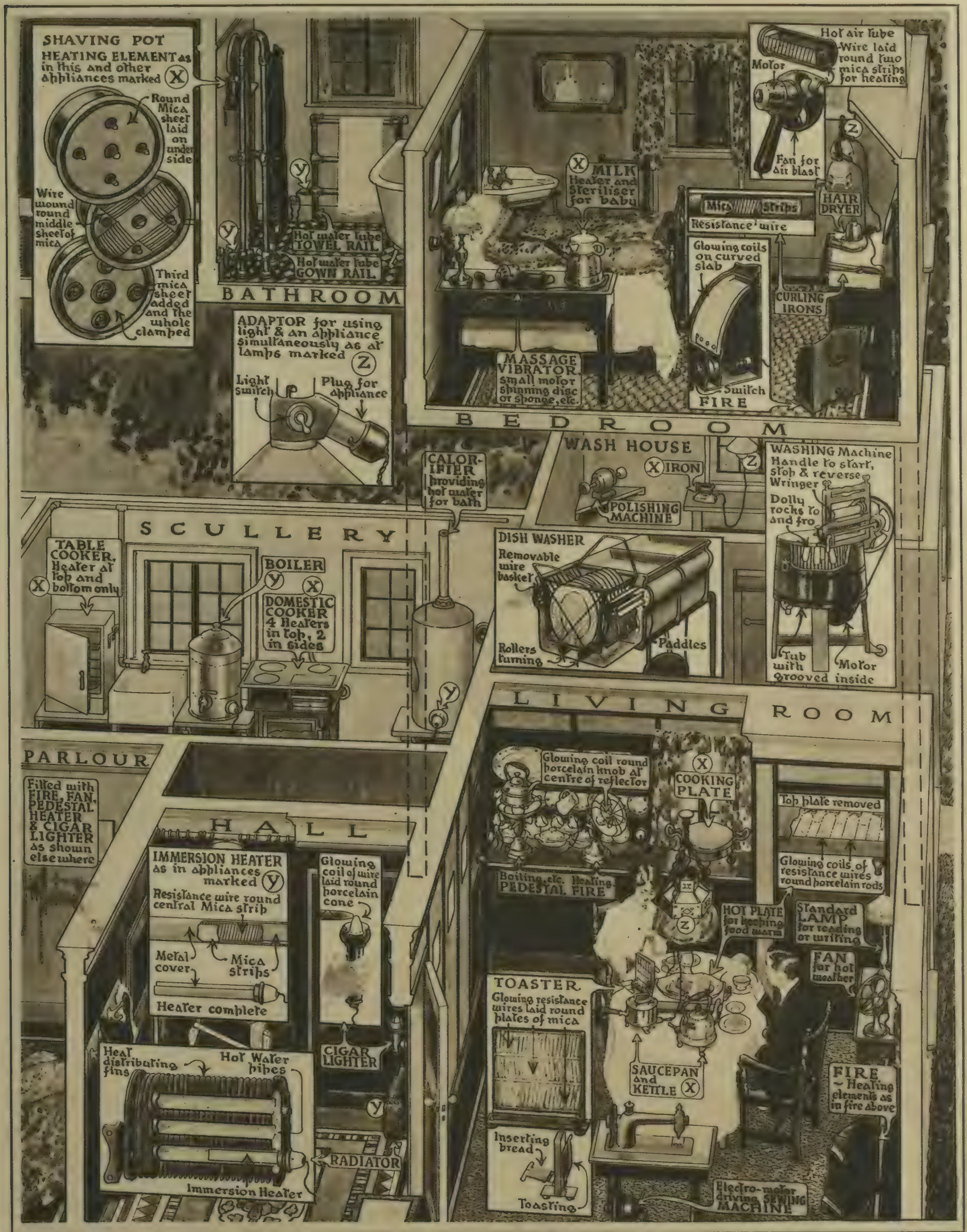


WITH MARBLE-LIKE MARKINGS DUE TO MORAINIC MATTER: TOWERING ICE-CLIFFS AT SPITSBERGEN—THE SCENE OF AN AVALANCHE THE PREVIOUS DAY.

"Enormous masses of ice frequently fall from the glacier precipices into the sea, breaking away from the parent body with the crash of thunder. One hears a terrific crack as a great crevasse opens up, and then many thousands of tons of ice slide forward, tilt over, and disappear into the sea. The recent scene of such a spectacle is here shown, the avalanche having fallen the previous day."—[Photograph by H. G. Ponting, F.R.G.S.]

FIGHTING THE NO-SERVANT PROBLEM: ELECTRICITY, MAID OF ALL WORK.

DRAWN BY S. W. CLATWORTHY.



LABOUR-SAVING IN THE HOME: THE ELECTRIC HOUSE, AND ITS INGENUITIES.

The drawing is a faithful representation of the All-Electric House in the recent "Daily Mail" Ideal Home Exhibition at Olympia, with the exception of a few minor changes for the purposes of diagram. The first floor is raised completely off the lower storey in order to look down into all rooms. All the different devices are illustrated, and details are inset as near as possible to their actual placing in the rooms, except the vacuum cleaner, which is already well known. Two small bedrooms, which merely repeated the devices, though with interesting variations, are omitted. There were a few medical appliances,

but these are not relevant to the question of labour-saving. The house appeared to be quite the most popular feature at the Exhibition, and a moderate-sized queue, bent on inspection, could be seen for hours on end. "The rather 'ironmongery' appearance would not be anything like so apparent in the home, since many items unnecessary in a single house were, of course, concentrated for exhibition. As a demonstration of electricity as the silent and quick servant, it was a remarkable lesson on possibilities. Our "Science Jottings" article deals with electricity in the home.—[Copyrighted in the United States and Canada.]

THE JOHN EXHIBITION: PORTRAITS BY A FAMOUS ARTIST.

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LA MARCHESA CASATI.



LORD ROBERT CECIL.



SIR ROBERT BORDEN.



LADY MICHELHAM.



COL. T. E. LAWRENCE.



THE RIGHT HON. GERALD MASSEY.



THE RIGHT HON. WILLIAM HUGHES.



LORD SUMNER.

All artistic London is interested in the work of Mr. Augustus John, one of the most famous artists of our time, and one of the most discussed. His new Exhibition of War, Peace Conference, and other portraits, at the Alpine Club Gallery in Mill Street, Conduit Street, opened on March 3, and is to remain open not later than March 30. Many well-known people have sat to the artist, and, besides the above, the portraits shown include those of Princess Antoine Bibesco, Lady Ottoline Morrell, Lord Fisher, the

Emir Feisul, and the Maharajah of Bikaner. It may be recalled that Mr. Augustus John was one of the official artists at the front during the war, and later he visited Paris to do a big official picture of the Peace Conference. His large cartoon in the first exhibition of National War-Paintings, and other pictures of his in the recent exhibition, attracted great interest. He is President of the National Portrait Society. Paintings, drawings, and etchings by him are always on view at the Chenil Galleries, by Chelsea Town Hall.

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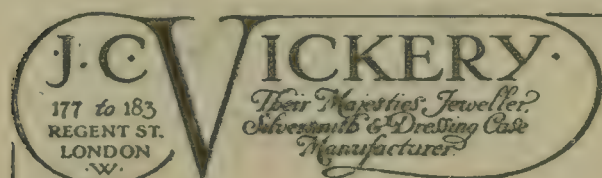
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THE WORLD OF FLIGHT

ON THE R.A.F.'S FIRST WAR.

By C. G. GREY,
Editor of "The Aeroplane."

AFTER all that has been done by the R.N.A.S., the R.F.C., and the R.A.F. in the recent war with Germany, it may seem strange or even silly to write of the little war lately concluded in Somaliland as the R.A.F.'s first war, but it is none the less correct. As was officially stated, this was the first time that aeroplanes have been used as the primary striking force. We are still in the dark as to the precise manner in which they were used. Mr. Amery's statement in the House of Commons and the Air Ministry's communiqué both told the general story of the brief campaign, but the technical details are still to be published. One does not in this phrase refer to technical details concerning the aeroplanes used, though these would be interesting in themselves to the half-million officers and men (or thereabouts) who served in the R.A.F. during the war. One refers rather to the technique of strategy and tactics in the purely military sense, which would be of interest to the six or seven million officers and men who have borne arms during the past five years. Doubtless in due course a full and proper despatch from the G.O.C. British Forces in Somaliland will be published, and we may then be permitted to judge in some measure how the use of aircraft as a primary striking force will modify war in the future. For, be it noted, despite the *obiter dicta* of over-enthusiastic believers in aircraft, nothing revolutionises the science of war.

New weapons may modify tactics, but they cannot change principles. When in the war with Germany low-flying aeroplanes were first used for attacking troops on the ground, or for "contour-fighting" as it came to be called, we saw the first real change in tactics since the introduction of artillery in the days of Crécy. Until then, aeroplanes used for scouting had been merely very superior scouts, and aeroplanes used for bombing had been merely artillery of long range and very moderate accuracy. With contour-fighting came new methods of attack and defence, just as tanks introduced new methods of attack and defence, but no principle of strategy was changed, or even affected. When in future wars on the grand scale, aircraft are used as the primary striking force, the opposing armies will manoeuvre in ways very different from those customary in the late European war, but the principles of Julius Cæsar and of Napoleon and of Clausewitz will remain as eternal verities.

Lest one should not have further opportunities of discussing matters concerning future wars—seeing that most people in these days are so much more interested in the purely commercial pursuits of peace—one desires to place on record a few deductions from this recent affair, for one knows from one's own experience that what appears in the pages of this publication passes down to future generations as history, and so those of us who have the privilege of writing therein are able to record our prophecies with the certainty that they will be filed for reference, and disinterred in their due time. One hopes that the more juvenile readers of these notes will remember to refer back to them when the next "War to End War" bursts upon an unprepared community. Imprimis, then, it may be taken as an axiom that aircraft cannot be used as the primary striking force unless the attacking army has such an air force as to ensure to it practically the Command of the Air. It is fairly obvious that if our old enemy the Mad Mullah, who seems to have been a somewhat sane leader of men during the last twenty years, had had any aircraft worth mentioning, the

aviators of the R.A.F. would have been too busy attending to them to be able to do the work required of them against his people on the ground.

Secondly, it is evident that if aircraft are to be the primary striking force, they must exist in large numbers. This was shown in the operations in North and South Russia against the Bolsheviks. In South Russia it would appear that the aeroplanes were only able to act as scouts. They were so few, and the Bolshevik armies were so numerous, that attacks from the air made little or no impression. In North Russia the same



PAINTED ON THE DOOR OF FOCH'S "VICTORY" CAR (RECENTLY SOLD): TWO MARSHAL'S BATONS CROSSED. The purchaser of Marshal Foch's military car received a signed attestation that it was the actual "Victory" car he used at the Front. Two small Marshal's batons are painted on the door.

Photograph by Topical.

state of affairs existed, complicated by the fact that the Bolshevik forces were spread over an immense area, and were hidden by dense forests. But one interesting incident (hitherto unrecorded, one believes) demonstrated the possibilities of aircraft. When the first British force was approaching Archangel by sea, the ships in which it was conveyed, chiefly tramp steamers, came under the fire of a fort armed with six-inch guns. None of the ships was armoured to withstand a six-inch shell, so the situation seemed a trifle difficult. The officer commanding the R.A.F. detachment, consisting of six Fairey seaplanes, got his machines away smartly while the naval and military authorities were

where the Army landed unopposed and occupied the city.

This demonstrated fairly conclusively that even a few aeroplanes may be used for "direct action" with good effect to achieve an important object, but it also showed that vast numbers of aeroplanes are necessary if they are to be used as a striking force against a numerous enemy. The number of aeroplanes used in Somaliland is not yet made known, but, judging by the fact that a Group-Captain was in command of the R.A.F., with a Wing-Commander under him, there cannot well have been less than three squadrons, which means at full strength fifty-four machines. Even if they were small squadrons of twelve machines each—which was the pre-war establishment—there would be thirty-six machines. These machines, being absolutely unopposed, would be able to make several attacks every day, returning again and again for fresh supplies of ammunition, and so would be as effectual as would at least a hundred machines which were opposed by anti-aircraft guns and a squadron or so of fighting machines. Against the few thousand men commanded by the Mullah they were, naturally, an overwhelming force.

It will have been noted that, despite the dispersal of his followers and their rounding up by Indian and East African infantry and a body of Somali "friendlies," the Mullah and his immediate suite escaped into the far hinterland, thanks to lack of cavalry to pursue him. Thence he will probably return to renew his raids when our aircraft have been withdrawn. Here we have the useful lesson that, no matter what new weapons may be used, and no matter who wins the war or how, the man with a rifle standing on his own flat feet in an enemy's country is the man who ultimately keeps a war won. From this one deduces several points which one desires to place on record as prophecies. In the next big war—as distinct from frontier fights and tribal disputes—aircraft will be the primary striking force only after one side or the other has won the command of the air. It is possible for an army to protect itself against aircraft by living in dug-outs, and it can hold up the enemy's advance by means of trench-lines, as in the recent European war. Enemy aircraft may raid the country behind it, but so long as the civilian population keeps a stout heart, and so long as the army

prevents the enemy on the ground from advancing, the country cannot be conquered and held.

Therefore the trench and dug-out lines must be broken by means less clumsy than the artillery preparation and infantry attacks which cost so much in blood and money in this war. This can be done with the modern tanks, which are as far ahead of the tanks used in this war as were our aeroplanes at the end of the war ahead of those with which we began the war. No infantry can keep pace with the modern tank, and no mechanical transport can cover and clear country properly except along the roads. Therefore it follows that in the next war aircraft will first clear the air and will then make the primary attack which will drive the enemy underground and disperse those on the surface. Tanks, of the speed and dimensions of war-ships, will break through organised defen-



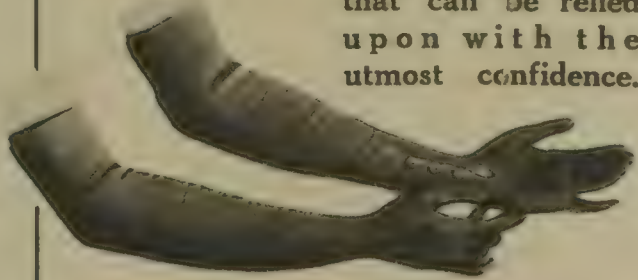
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debating the method of attack, and these seaplanes dropped a few bombs in or near the aforesaid fort. The result was that the Bolshevik gunners evacuated the fort with celerity, and fled down the railway line pursued by machine-gun fire from the seaplanes flying at a height of twenty or thirty feet. And during this pursuit the Fleet was able to come alongside the quays,

sive lines, and subdue strong points in or behind those lines. And behind the tanks must come a huge force of cavalry, or mounted infantry, to clear and police the occupied territory. So far from mounted troops being useless in future wars, it will be found that, with the advent of the aeroplane as a striking force, the need for mounted troops will be greater than ever.

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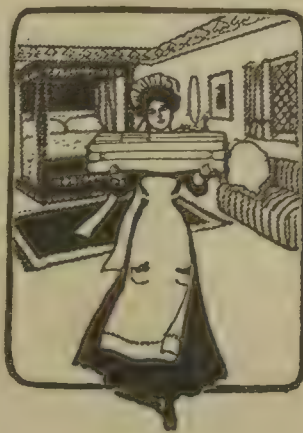
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LADIES' NEWS.

CHRISTENINGS seem to be taking the place of weddings during Lent. The most important, that of Captain and Lady Patricia Ramsay's boy, is some time past. It was a Royal Family affair. In addition to their Majesties, in which Queen Alexandra is included, and members of the Royal Family, there was a high-up pew filled with members of the domestic staff from Clarence House and Bagshot; there were members of royal suites; there were the Countess of Dalhousie and her children; and there were Mrs. Eyres-Monsell, wife of one of the sponsors; Lady Patricia's doctor; and four Press representatives—so that the little chapel was by no means full. Westminster Abbey was hardly large enough to hold all those who were invited to the wedding of the baby's parents. For his own baptism, therefore, practically no invitations were issued, so no one could feel hurt.

What amused me, when the solemnity was over, was that the nurse was so taken up with her precious charge that when the King asked her some questions she answered apparently rather in the tones of one high up in baby lore to a more ignorant man. His infantile majesty was asleep, so nurse sat on, though their adult and most high Majesties stood inspecting him. A very handsome little chap he is, but with such parents he really would be a very self-willed baby to be anything else. Lady Patricia with her gallant sailor-man was early present, and after the christening everyone shook hands with her except the Duchess of Albany, who kissed her. The Prince of Wales sat just behind Princess Mary, and they said their responses out clearly, and took over the baby's spiritual responsibilities with apparently easy minds. There was a luncheon at Buckingham Palace after the event. Two days later, Captain Ramsay took his wife back with him to Paris, whence Lady Patricia goes to Beaulieu to join the Duke

of Connaught. There is some idea that Captain Ramsay may ere long be transferred home from Paris. If this prove true, home-ites will be delighted.

This Monday—I write before the day—the Marquess and Marchioness of Carisbrooke's small daughter will be received into the Church by the Archbishop of York, who has long known the little lady's mother and her grandmother, Lady Londesborough. The ceremony will be in the Chapel Royal, St. James's, and several members of the Royal Family will be present. The Queen of Spain is to

do her daughter; when silver fox is favoured by the Queen, Princess Mary wears silver fox. It is a pretty form of the sincerest flattery, and shows not only that the Princess thinks the Queen can do no wrong, but that the daughter immensely admires her mother and desires to look as like her as possible. In one thing Princess Mary resembles the Prince of Wales. She laughs seldom, but how she does enjoy it, and how infectious it is when she does!

I have seen but one pair of tan top-boots worn in town. They looked clumsy and eminently unsuitable, which is about the blackest crime there is in dress. For a girl possessed of thick ankles they possibly provide a refuge, but I should prefer even sturdy ankles, stockinged and unashamed, to these boots. I heard a man suggest to his companion that the wearer was a Bolshevik. This showed how that overworked word is misunderstood. It means simply "majority," and this one pair of top-boots was in what a celebrated Irishman once called the least bit of a minority!

The great firms of our great city which attend to the important matter of our clothes are keeping pace with the prevalent temperature rather than the

calendar. Already at Debenhams and Freebody's there is a wonderful display of spring novelties. Women contemplating these fresh, gay, and delightful things ache to put off the grub and assume the butterfly. Looking round these celebrated dress salons with a friend who openly acknowledges to shopping memories thirty years old, I was amused at her amazement. She could hardly believe in the variety, the range from simplicity to sumptuousness, the way all tastes were pandered to, and all classes of incomes thought of. But when she thought things over, she saw how necessary to present-day conditions were such enterprise, taste, talent, and foresight as she saw evidence of in Debenhams and Freebody's celebrated house.

A. E. L.



A HEAD ORNAMENT, A NEW COIFFURE, AND A HAT.

One of Fashion's many decrees is that the fan and hair-diamond shall match. Large combs, giving a Spanish effect, as shown on the centre head, are very much the vogue; and a picture-hat is always becoming.

be one of her niece's godparents, but difference in religion will prevent her from seeing that her spiritual charge acquires the requisite knowledge in the vulgar tongue. There will be a substitute at the baptism, and a substitute must do the duty required later. I wonder if Queen Victoria Eugénie will follow Princess Mary's example, and give the baby something useful to her when she grows up?

The weather plays us odd tricks; one day we pull our warmest furs more closely round us—the next, but for their value, we would gladly throw them away. I have noticed recently that when the Queen wears ermine Princess Mary follows suit; when her Majesty dons moleskin, so

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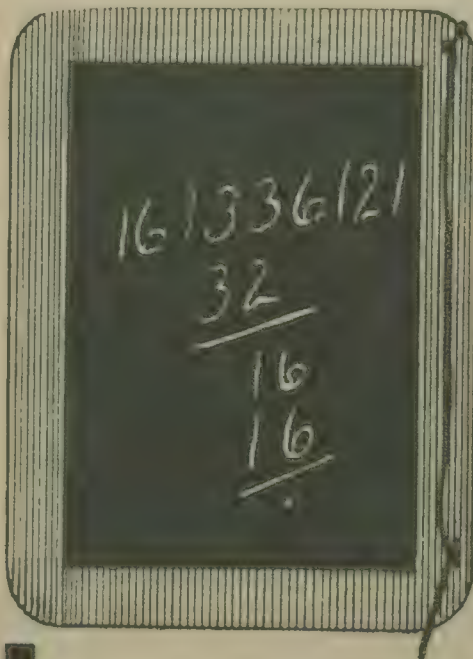
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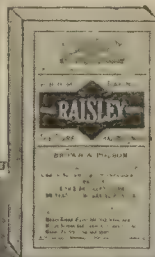
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MELTIS CHOCOLATE

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"SOUND IN THE WAR"—(Continued from page 366).

movements of the box and the heavy mass; and in this way any sound vibrations in the earth on which the box was laid were communicated to the ear. A very interesting use of these "geophones," as they were termed, is shown in Fig. 13. The observer has a pair of geophones, connected to the two ears; one space only in each geophone is in use. The sounds are rendered with sufficient faithfulness to allow the observer to use his "binaural" sense. He adjusts the positions of the geophones on the ground, until the sound seems to him to be neither to the right nor to the left; the source of it is then in a direction perpendicular to the line joining the two geophones. The illustrations are taken by permission from a paper by Mr. Standish Ball, published by the Institute of Mining and Metallurgy.

Sound was largely used to determine the position of enemy guns. The method will be understood by referring to Figs. 14, 15, and 16; which are taken from a paper in *Nature* (Nov. 13, 1919).

Suppose that a gun whose position is to be found is fired at S (Fig. 14). The sound-wave reaches an observer at A at a certain time. Some time later it reaches B. If this extra time is measured, it is easy to find how much further it is from S to B than from S to A, because the velocity of sound is known. Draw a circle with B as centre and the extra distance as radius. In just this same way it is found that C is a certain distance further from the gun than A, and a circle is drawn round C as in the figure, with the corresponding extra distance as radius. If a circle is now drawn passing through A, and touching the other two circles, the centre of this circle must be S, the position of the enemy gun.

The system as fully elaborated consisted of a set of six microphones all connected by wire to the central station, which was placed in a dug-out or some convenient place. At the central station was a recording instrument, in which a cinematograph film was unrolled at a steady rate. Each microphone was connected to an arrangement by which a straight line was con-

tinuously registered on the film as long as the microphone was undisturbed. When the explosion wave of a gun reached the microphone the continuity of the line was broken, and was not restored until the disturbance was over. Fig. 15 reproduces a piece of film showing the effect of a German howitzer; the six lines and their breaks are easily recognised. The vertical lines are time-markings, hundredths of seconds being actually recorded on the film.

The arrangement of the system in the field is shown in Fig. 16. At the advanced posts, observers listened



Photo. W. S. Reridge, F.Z.S.

THE ONLY REPTILE WITHOUT RIBS: THE SOFT-SHELLED
LAND TORTOISE (TESTUDO LOVERIDGII).

Two examples of this newly discovered soft-shelled tortoise are in the London Zoological Gardens. They were found during the campaign in German East Africa by a soldier-naturalist, Mr. Loveridge. The tortoise is the only ribless reptile. It can inflate itself.

for the sound of guns, and, by pressing a button when they heard a gun of which they wanted a record, set all the gear at the central station in motion.

A somewhat different system of sound-ranging was early employed by our French Allies, and was the source of inspiration of our own. It is known that when a bullet or shell moves through the air at a rate greater than the velocity of sound, a V-shaped wave is started in the air, analogous to the V-shaped wave which a

vessel or a swimming bird causes on the surface of a lake, provided that the motion is faster than that of the ripple which it is causing. These peculiar air-waves are most beautifully shown in photographs of flying bullets taken by Mr. C. V. Boys by means of an electric spark. In Fig. 17 it is easy to see two such waves—one from the front and one from the rear of the bullet. The irregular lines are shadows of the electric wires used in forming the spark; the thick lined wedge at the top is a screen which has parted the waves; and at the bottom is a screen reflecting the waves very clearly.

The speed of the bullet is about 2000 feet a second. In the second photograph (Fig. 18) the bullet has been shot through a piece of glass sheet; all the glass fragments that are shot out of the glass have their own V-shaped wave.

When the V-shaped wave of a high-velocity shell passes over an observer, the sudden violence of this wave gives him the sensation of having heard the explosion of the gun. The French call this wave the "onde du choc." We get a similar effect whenever an object moves faster than sound and piles up the "onde du choc."

As a bullet slows down the V-shaped wave becomes less pointed and broader; we see this as a boat reduces speed. Now the direction of movement of this wave on the battlefield can be found without great difficulty, and it is possible by observation of these directions at various points to calculate the position of a gun.

The sound-ranging of the war has also been used by the Navy, and is, indeed, still in use. A set of hydrophones is placed under water along the coast, at distances of a few miles from each other and from the shore. These are all connected by cable to a central station on shore. An under-water explosion sends out a wave which affects the hydrophones in turn, so that the position of the explosion can be calculated in the way already explained. In Fig. 19 is shown the record of an explosion seventy miles away from the hydrophones; records have been made at 230 miles. Positions far out at sea, out of sight of all landmarks, can be fixed accurately by this means.

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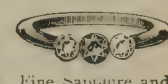
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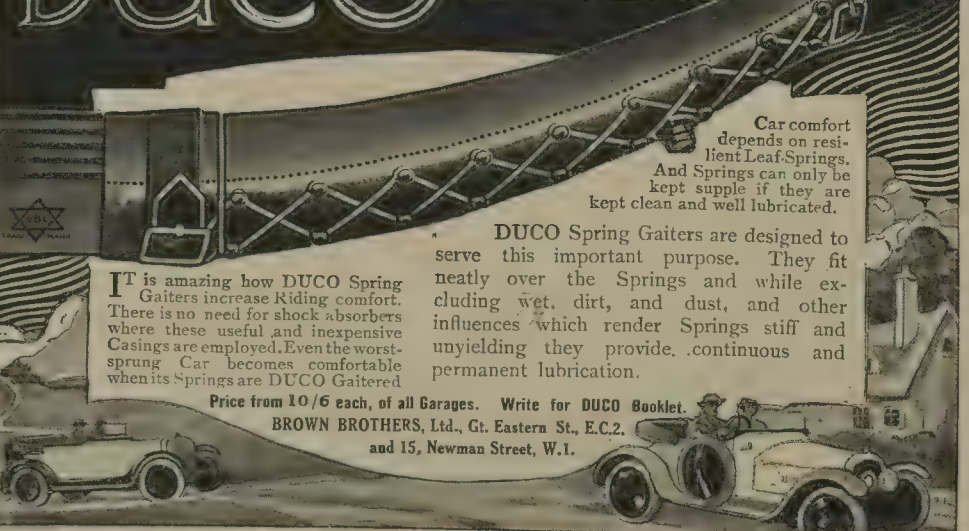
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SCIENCE JOTTINGS.

ELECTRICITY IN THE HOUSE.

THE Ideal Home Exhibition is over, and has left on the minds of most of those who visited it the impression that the home of the future will be entirely run by electricity. From the sanitary point of view, this is a consummation devoutly to be wished, for it is certain that in cleanliness, in the absence of soot and poisonous fumes, and in that of worry caused by the need of constant attention, electricity is far and away the best means yet

by a sudden increase of voltage caused by the changing of dynamos at the power-station or otherwise. The rival system—which depended, if I recollect rightly, on the electric deposition of copper or some other metal on a thin plate of mica—which was a good deal more enduring, seems to have quite died out. Perhaps the manufacturers of such appliances wish to see the American policy of "scrap and replace" adopted instead of the good old English one of turning out stuff that will last a lifetime. They may be right from their point of view, but hardly from that of the community.

wood fire. Although ingenious, it does not seem as if it ought to be the last word of science.

Two cautions may also be addressed to those householders, actual or potential, who may be so fascinated by the appearance of the Electric House and other marvels as to plunge into the reckless substitution of electric for gas or other existing appliances. One of these is that they must be prepared to execute nearly all adjustments and repairs themselves. As things are at present, it is next door to impossible to get the simplest repairs of any electrical appliance executed except at very great cost



THE ROYAL NAVY v. THE ARMY, AT TWICKENHAM: THE ROYAL NAVY TEAM.

THE ROYAL NAVY v. THE ARMY, AT TWICKENHAM: THE ARMY TEAM.

The Navy won by a goal, a goal from a mark, a penalty goal, and four tries (23 points) to a goal and two tries (11 points).—[Photographs by C.N.]

discovered of lighting, heating, and cooking. The present writer speaks with some knowledge of the subject, having more than ten years ago got rid of all kitchen ranges, boilers, and gas geysers from his dwelling-place, and having replaced them all by electric appliances. Save in the one particular of cost, he has never yet regretted the change.

The first thing, however, that struck one on visiting the Exhibition was the little advance that has been made in ten years in adapting electricity to the daily needs of the house-keeper. Practically all the appliances for heating rooms, cooking food, or boiling water there shown depend on the use of high resistances—or, in other words, of wires which offer such obstruction to the passage of the current that they grow hot in the struggle. Now the writer's experience is that all such apparatus breaks down sooner or later, either by the gradual polarisation of the wires or by the strain accidentally thrown upon the insulators

Another point is that there did not seem to be shown any means of electrically boiling water that could be called economical. Judging from the world's experience with gas, the only scientific way of doing this is drop by drop, which is in effect that of the so-called "geyser." Electricity would seem to offer peculiar facilities for this, because, in theory, nothing could be easier than to surround a water-pipe with a coil of high-resistance wire through which a current was passing. Yet nothing in this way seems to have been attempted, and it may therefore be concluded that there are technical difficulties in the way which do not suggest themselves to the theorist. All the boilers exhibited were practically water-tanks into which an "element" capable of acquiring a great heat was plunged. This is the principle on which the Red Indian, according to the tales of one's youth, boils water in a pail of birch-bark by pitching into it one or more stones made red-hot in a

and after intolerable delay. How far this is due to the fact that most of the smaller parts—binding screws, insulators, and the like—used in England were up to the outbreak of the war made in Germany, it is not easy to say. It is certain that, owing perhaps to the revolution in the electrical trades caused by the war and the subsequent action of the Unions, it is rare to find a working electrician with the most rudimentary capacity for his work. This will probably improve in time, but at present there is hardly a linesman whom one can invite into one's premises compared with whom a pre-war plumber would not appear as a ministering angel. Hence Paterfamilias must be prepared, if he decides to make a complete electrical installation in his palladium, to show his proficiency with pliers, soldering-iron, and perhaps the lathe. The consideration may well give him pause. The other caution is against receiving the calculations of the maker of electrical apparatus as to the cost of

[Continued overleaf.]

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current as gospel. Most of the figures given at the Exhibition are based on the statement that electricity for heating purposes can be obtained at 75 pence (why do not they say three farthings?) per Board of Trade unit. I wish I could learn where this blissful state of things exists. When my own installation was made ten years ago, I was assured by the company supplying current that the price would be 1½d. per unit, and would shortly be lowered. In their present quarter's bill, they are charging me 1½d. per unit, *plus* 50 per cent. as a sort of war tax; nor has the lowering of the price of coal made the least difference. Hence the cost per unit is more like 3d. than 1½d., and the exhibitors' figures must therefore be multiplied by four. *Verbum sap.* F. L.



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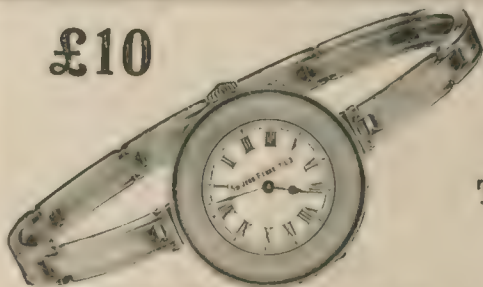
THE CHRONICLE OF THE CAR.

The Fuel Problem.

A number of very interesting proposals have been made recently in the matter of the present price of motor fuel. Some of them seem to be practical, but to miss the important point that the trusts controlling the world's fuel supplies hold a trump card in their ability to play off one purchaser against another. They have told us, without any beating about the bush, that if the price of fuel is controlled here to a figure below that at which it can be sold in other countries we shall get no petrol. Obviously, as this is only too perfectly true, it is of no avail to attempt control unless the latter be international. The suggestion that the great petrol-using countries of Europe should come to a common agreement to limit the price at which it may be landed is good, if it can be done. I say if it can be done because we are faced by a combination of trusts which may quite well turn out to be too powerful even for Governments. Even in our own country I believe it is rumoured that certain members of Parliament are interested in the trusts, and have been known to engage in lobbying and the rendering of other services to the oil rings. If that is the case here, where politics are comparatively clean, it is fair to assume that the operations in other countries of which the same cannot be said may amount to

[Continued overleaf.]

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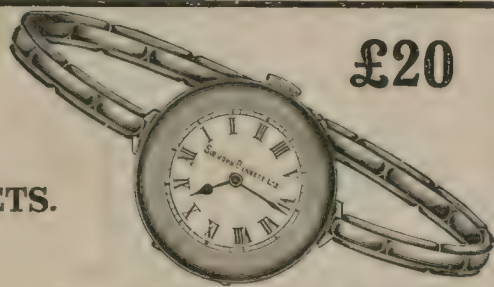
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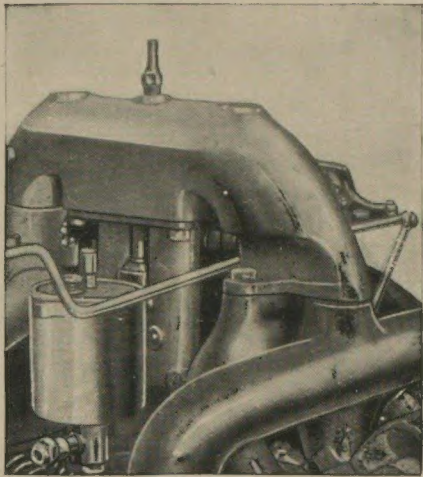
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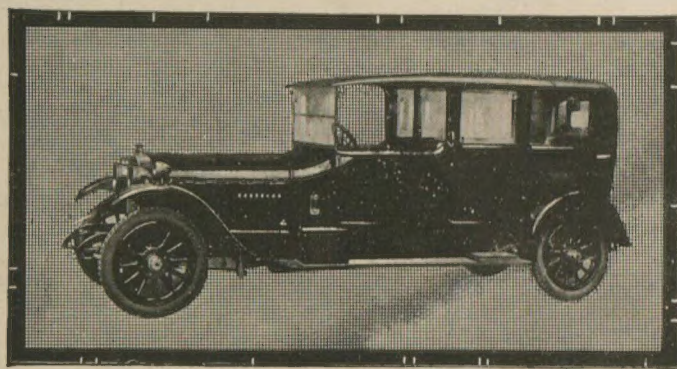
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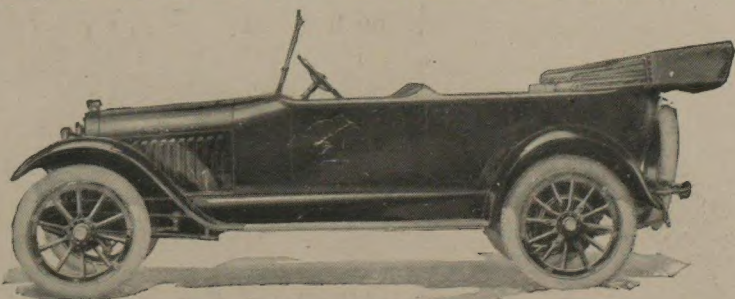
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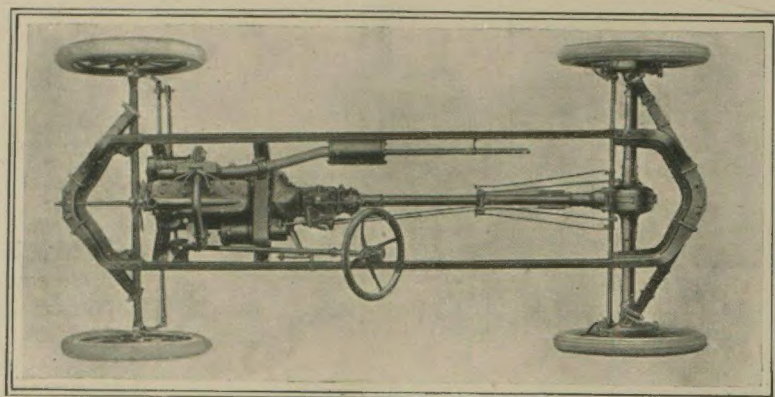
actual subordination and corruption. Undoubtedly, a common agreement to limit prices would produce a good effect, but I am inclined to think it would not do as a permanency, because of the possibility of one party or another suddenly denouncing the agreement. I think we have to look beyond for our own solution of the question, in so far as it relates to the imported product. That solution, I firmly believe, is to be found in the total prohibition, after a certain date three or five years hence, of all petrol and refined oils. I know that at first sight this looks like suicide, but I submit that the proposal will bear examination.

What the Effect Would Be.

If the suggestion were made effective by law, is it conceivable that the trusts would sit down idly and allow their best market to go by default? It is scarcely probable. What would happen then would be that the trusts would erect their own refineries here—they are starting to do that without the urging of legislation, but with an eye to the possibility of something of the kind happening. That would mean the

employment of British capital and native labour, which would incontrovertibly be for the good of the nation. But the main effect would be that we should be able to

represented by the cost f.o.b. at the port of origin of crude oil, plus freight and insurance charges, plus the costs of refining and distributing in this country. We should get away from the state of things where inquiry, as the Profiteering Committee has discovered, ends in a maze of conflicting detail, and we remain even less wise than we were on the question of who gets the enormous profits which are made by the several interests which handle the oil through the various stages from the well to the motorist's petrol-tank. As things are at present, every one of these many concerns can prove that at the most it is making an infinitesimal profit, and that it only stays in the business for philanthropic or patriotic motives. Under the scheme I suggest, we should at least know who was getting the profits, and they could be brought within reasonable limits. W.W.



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ascertain to the last fraction what the cost of petrol and refined paraffin should be to the consumer. It would be

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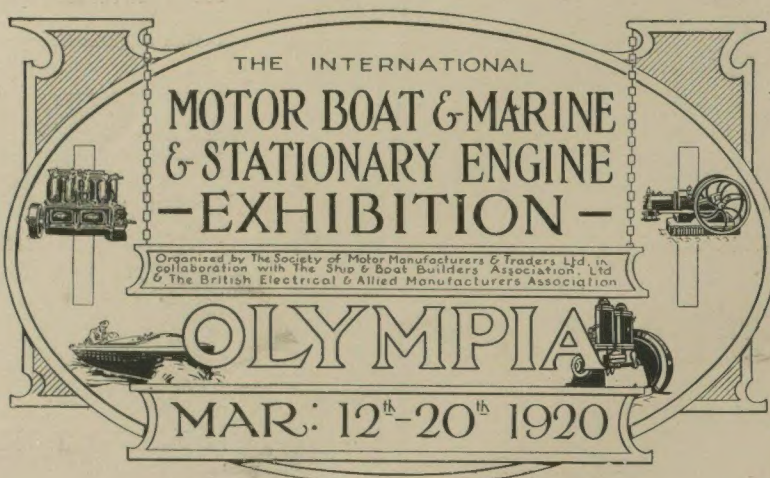


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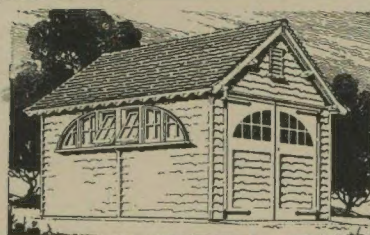
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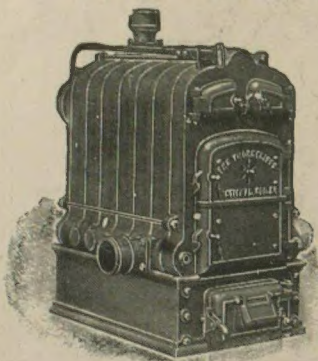
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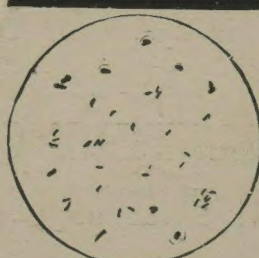
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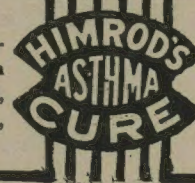


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